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LABORATORY NOTES.

By Albert B. Prescott.

I. Solubility of Quinia Precipitate in Water-washing.

On precipitating quinia sulphate acidulate solution with sodium or with ammonium hydrate, and washing on the filter with water until the washings gave no cloudiness with solution of barium salt, Mr. W. J. Holloway found a loss of 11·6 per cent. of the quinia. The weight of quinia sulphate taken was 0·250 gram; two operations, one with each alkali, giving the same result. Two other operations were made, the precipitates respectively by sodium hydrate and by ammonium hydrate being set aside for 20 hours before filtering, and then each washed with 18·4 cc. of water. The precipitate by soda had wasted 2·9 per cent. of the alkaloid, that by ammonia 10·6 per cent. The filtrate from one of the precipitates by ammonia (added in very slight excess) was made turbid by adding soda, and the dilute washings of this same precipitate were made turbid by ammonia (though the first filtrate was not so affected). Apparently the solvent power of water upon the alkaloid was diminished by presence of a very small proportion of ammonia, though it is increased, as is well known, by presence of more ammonia. A change in the proportion of the same solvent reverses its effect, just as dilute sulphuric acid dissolves less lead sulphate than either water or concentrated sulphuric acid.

Mr. A. S. Lobb washed 0·280 gram of dried quinia on the filter with a half liter of water, dropped from a burette, at about 87°F., and found the alkaloid had lost 50 per cent. of its weight, each cc. of the water having dissolved 0·000216 gram of quinia. In all these cases the filtrates gave a precipitate with potassium mercuric iodide.

The solubility of quinia precipitate in sodium sulphate solution becomes of interest, because this solution is the filtrate, in the use of the best preci-

pitant, with the common salt of the alkaloid. From an experiment by Mr. Lobb it appears that solution of sodium sulphate has practically neither more nor less solvent power than pure water. A precipitate of 0·280 gram of the alkaloid was washed with 500 cc. of a half-saturated solution of sodium sulphate, dropped from a burette on the filter during 2½ hours, and then washed with pure water (214 cc.) until free from sulphate, when 0·1375 gram of alkaloid remained. Therefore, of the 714 cc. of sodium sulphate solution and pure water, averaged together, each cc. dissolved 0·0002 gram of alkaloid, a result practically the same as the 0·000216 gram dissolved by a cc. of pure water.

Of course, solubility in washing precipitates must fall below *solubility of saturation.* The latter is given for quinia, at 1667 parts of water of 68°F. (Sestini), in which proportion 1 cc. of water dissolves 0·0006 gram of the alkaloid, nearly. J. Regnault found 2024 parts of water at 15°C. to dissolve 1 part of pure quinia.

Evidently, the precipitation of quinia as a free alkaloid is inaccurate in quantitative work, under any circumstances, and, if there is much dissolved matter in the filtrate to be washed away, the operation gives no result of even approximate quantity. By measuring the filtrate with the washings, some notion of the loss may be gained, but this loss is varied by proportion of the precipitant, and may be varied by other dissolved bodies in the filtrate. Moreover, the precipitation of quinia by alkali, in the preparation of citrate of iron and quinia, is wasteful and inaccurate.

II. Gravimetric Determination of Quinia, as a Precipitate by Potassium Mercuric Iodide.

The value of this precipitate, washed and dried at 212°F., was found to be 2·900 grams for 1 gram of quinia, dried at the same temperature. This finding was the mean of three determinations, using Mayer's solution upon an acidulate sulphate solution of alkaloid, the results being respectively 0·801, 0·824 and 0·812 of precipitate from 0·280 of alkaloid. Just 26 cc. of Mayer's solution were required for the full precipitation of each portion ($26 \times 0{\cdot}0108 = 0{\cdot}2808$), after which 4 cc. of the standard solution were added in each portion, to represent an excess of the reagent, as convenient in a gravimetric operation. The quinia taken was Powers & Weightman's "pure quinia," which was found to lose 6⅔ per cent. at 212°F., so 0·300 gram was weighed in

each portion to represent the 0·280 gram as dried at 212°F. The volume of Mayer's solution required for each, as given above, very nearly coincides with 0·280 of Mayer's quinia. Farther investigation is desirable as to presence and proportion of combined water in the residue of quinia at 212°F. Mr. A. H. Allen[1] has reported the residue from ether solution to retain constant, at 212°F., 4·28 per cent. of combined water, a little less than that of a monohydrate. From this report Mr. A. N. Palmer[2] dissents, stating that a residue of constant weight can only be obtained at 260 to 270° F. See IV.

The precipitate by potassium mercuric iodide is very close, and bears water-washing without weighable loss. The reagent need not be of standard strength for gravimetric results; it can be prepared simply by treating solution of corrosive chloride of mercury with solution of iodide of potassium until the precipitate at first formed is just all dissolved. (For the execution of the determinations given in this note I am indebted to Messrs. J. J. Johnston and A. S. Lobb.)

III. Gravimetric Determination of Quinia as a Precipitate by Phosphomolybdate.

This precipitate is exceedingly close in the case of quinia, and bears washing without loss, but does not bear a temperature above 158°F. (70°C.) without reduction of molybdenum, shown by a blue color. The value of the precipitate, dried below 158°F. to a constant weight, was found by Mr. Lobb to be 3·665 grams for 1 gram of quinia as dried at 212°F. This result was the mean of two nearly identical determinations, 0·280 gram of the alkaloid giving respectively 1·026 and 1·0265 gram precipitate. The reagent, the acidulate solution of sodium phosphomolybdate, is added in slight excess, when the precipitate separates admirably.

IV. Solubility of Quinia Precipitate in Washed Ether.

This was found by Mr. Lobb to be 20 parts of the ether for 1 part of quinia (monohydrate), after 24 hours digestion in a stoppered jar. A portion of the saturated ether solution was drawn into a specific gravity bottle and its weight obtained, then poured, with the ether rinsing, into a thin glass evaporating dish (tared), the ether evaporated, the residue dried at 212°F. A constant weight was believed to be obtained,

[1] "Phar. Jour and Trans.," vi, 964, June 3, 1876. [2] *Ibid.*, vii, 89, July 29, 1876.

notwithstanding the difficulty of gain by hygroscopic water while weighing. The last four weighings were, for dish and contents, 26·895, 26·894, 26·893, 26·895. (See reference to Mr. Palmer in Note II.) The residue of quinia from ether solution is amorphous and does not yield a perfectly crystallizable sulphate. Taking this residue as a monohydrate, nearly 21 parts of the *washed ether* are required to dissolve a precipitate of quinia containing 1 part of anhydrous alkaloid.

The solubility of quinia in *ether* is given by van der Burg at 23 parts (ether of sp. gr. 0·72 and 18°C.), by Merck at 60 parts, Flückiger and Hanbury 21 parts, by Hesse—for quinia trihydrate—at about an equal weight of ether, by J. Regnault at 22·6 parts (15°C.)

V. Valuation of Six Samples of the Citrate of Iron and Quinia in the Trade.

The samples were obtained indiscriminately from different dispensing drug stores in Michigan. Only *the total alkaloid* was determined. This was done by extraction with chloroform, as follows: a weighed portion of the scales was dissolved in water in a wide tube with a stopper, a small amount of tartaric acid was added (to prevent precipitation of ferric hydrate, a hindrance to the separation of chloroform), solution of sodium hydrate was added to alkaline reaction, and the liquid repeatedly shaken with successive portions of chloroform, the chloroform being drawn off into a weighed beaker and evaporated until a portion of the chloroform caused less than one milligram increase of weight to the beaker. The total residue in the beaker was now dissolved in water acidulated with sulphuric acid, the solution treated with a slight excess of sodium hydrate solution, then extracted with successive portions of chloroform, as before, and the residue from this solution was dried at 212°F. to a constant weight. This residue is given as the alkaloid, containing, according to Allen, 4·28 per cent. water. The determinations were done by W. J. Holloway, in June, 1876, with the following results: The samples gave

5·2 12·2 8·7 9·0 11·4 8·3 per cent of alkaloid.

VI. The Presence of Sulphates in Citrate of Iron and Quinia.

In each of the six samples, numbered above, Mr. Holloway found sulphates present. In three of them the quantities of sulphuric anhydride were found to be less than 1 per cent. of the preparations; in the other three the quantities were found to be respectively 6·5, 3·5 and

1·8 per cent. of the preparations. A sample of citrate of iron and ammonium, from the same manufacturer who furnished the sample of quinia iron citrate which had the 6·5 per cent. of sulphuric anhydride (above given) was found to contain 4·9 per cent. of sulphuric anhydride. A few ounces of solution of tersulphate of iron were precipitated by ammonia water, and the precipitate washed "with water until the washings are nearly tasteless," as the Pharmacopœia directs in the preparation of solution of citrate of iron, from which the three scale iron citrates are made. In this washed ferric hydrate, sulphate was found present, amounting, as sulphuric anhydride, to 14·8 per cent. of the drained moist precipitate. A sample of citrate of iron and quinia was made by the pharmacopœial process, except that the quinia sulphate was added, as such, without precipitating the alkaloid, and the scales were found to contain 4·3 per cent. of sulphuric anhydride. By calculation (if I am correct) all the sulphuric anhydride of the quinia sulphate cannot form over 1·8 per cent. of the scales of quinia iron citrate. If 10 per cent. of water be assumed in the scales, their per cent. of sulphuric anhydride would be about 1·6. It will be remembered that the British Pharmacopœia, for preparation of the iron citrates, directs to "wash the precipitate (ferric hydrate) with distilled water until that which passes through the filter ceases to give a precipitate with chloride of barium." Such is the well-known adhesion of ferric hydrate for alkali salts, that to wholly remove them requires persistence and wash-water, in a sufficient quantity of each; but it is farcical to wash away the sulphate from the quinia, wasting from 2 to 11 per cent. of the alkaloid and making the preparation uncertain in strength within the same limits, while taking a greater quantity of sulphate in the hydrated oxide of iron. Of course, after the solution takes place, any quantity of combined sulphuric acid present, if derived from the iron precipitate, will be *just as much* in combination with the quinia as though it had been introduced in quinia salt.

VII. The Proportion of Quinia in the Citrate of Iron and Quinia of the U. S. P.

Our Pharmacopœia has no statement of the percentage of quinia in the scales, nor any quantitative test. By calculation from the materials, assuming that normal ferric citrate is formed, the preparation, if made strictly anhydrous, would contain 15·0 per cent. of absolute quinia,

equivalent to 17·5 per cent. of quinia trihydrate, no waste of quinia being considered. The *water* lost by citrate of iron and quinia on the steam-bath, in attaining a constant weight, was found by Mr. Holloway, for four samples, respectively at 9·2, 4·2, 8·1 and 6·8 per cent. A sample prepared according to the Pharmacopœia (not "soluble"), when recent, was found to lose 12·5 per cent. on the steam-bath. But whether any combined water is retained on the steam-bath or not, I do not know. The mean of the five samples above given is 8·4 per cent. loss on the steam-bath. The proportion of quinia by calculation from the materials, assuming 8 per cent. of water (with normal ferric citrate) would be 13·9 per cent. of anhydrous quinia, or 16·2 per cent. of quinia trihydrate. Two samples of quinia iron citrate, made by Mr. Holloway (without precipitating the alkaloid from its sulphate, and with addition of ammonia, as described in Note VIII), were found by him to contain respectively 14·9 and 14·2 per cent. of quinia, as dried at 212°F.

The British Pharmacopœia requires about 16 per cent. of quinia, the direction being to dissolve the scales in water, add "a slight excess of ammonia," the precipitate, "collected on a filter and dried," to weigh 8 grains for 50 of the scales. The British preparation takes 1 part of quinia sulphate to 3 parts of citric acid, the United States preparation takes 1 part of quinia sulphate to 3·6 parts of citric acid.

VIII. The Pharmacopœial Preparation of Citrate of Iron and Quinia.

The preparation strictly according to the United States Pharmacopœia not being a "soluble citrate," is not in use and not under discussion. Any scale citrate in favor must be a "soluble citrate," *i. e.*, an ammonio-citrate, and probably all or nearly all the citrate of iron and quinia manufactured is made on the basis of some sort of citrate of iron and ammonium, with addition of quinia (or quinia sulphate). In the United States citrate of iron and ammonium, *normal* ferric citrate solution is treated with enough ammonia to saturate 38 per cent. of the citric acid from which the ferric citrate was made. In the British citrate of iron and quinia, an *acid* solution of ferric citrate is treated with sufficient ammonia to neutralize 20 per cent. of the citric acid, and also with quinia enough to neutralize about 4 per cent. of the citric acid. The German "Chinium ferro-citricum" consists only of normal ferrous

citrate with quinia added thereto, making the double citrate slightly basic. (It contains 1 part quinia [hydrate] to 6 parts of the citric acid used, equal to 1 part quinia sulphate to about 5 parts citric acid.)

It was found by Mr. Holloway that a solution of citrate of iron and ammonium, *as basic* as the U. S. preparation of this name, does not perfectly dissolve quinia or quinia sulphate, at least to make permanently soluble scales. The U. S. citrate of iron and ammonium requires the addition of citric acid, with the quinia (approaching the proportions of the British preparation), to make from it a good quinia ferri citrate. Mr. Holloway prepared two samples as follows: Normal ferric citrate solution (U. S. P.) was taken in two portions, each of 1 fluidounce, in each 48 grains of quinia sulphate were dissolved, and then 1½ fluidrachms of water of ammonia (half the proportion for U.S. citrate of iron and ammonium were added; then citric acid was added, to portion one 2 grains, to portion two 3 grains; both portions were scaled. Portion one gave the largest scales, which dissolved with tolerable readiness, but on diluting the solution there was some turbidity from separation of quinia (as occurred more decidedly in preparations made with more ammonia). The scales of portion two were very easily and quite permanently soluble. The product of portion one weighed 296 grains, of portion two 288 grains; portion one yielded 14·2 per cent. of quinia (steam-bath residue from chloroform solution), portion two 14·9 per cent.

If the quinia sulphate is to be precipitated (see Note VI), I would suggest that in dissolving it for this purpose citric acid solution be used instead of sulphuric acid, and that the precipitate be made, in a limited quantity of solution, by adding a slight excess of ammonia, and drained without washing. The citrate of iron solution, in any case, should be prepared free from sulphate, by washing the iron hydrate to chemical test.

IX. Examination of Sugars and Syrups.

The samples examined were sent by Mr. L. Rossiter, of Lake Forest (Chicago), Illinois. Mr. Rossiter is the writer of numerous letters, published in the "Chicago Tribune" in the summer and autumn of 1876, on the poisonous effects of sugars. He believes that a large proportion of the sugars of the market contain poisonous impurities, resulting from the use of chemicals in their manufacture, his

opinion being based upon the effects of the use of sugars as food, these effects being stated chiefly for persons of weak or deranged digestion. He surmises, from testimony and report as to sugar manufacture, that sugar of lead is much used in decoloring sugars, and that traces of the lead escape being removed. Beside the lead, he claims no information as to what the asserted injurious constituents are, but seems to assume that they are inorganic, from manufacturers' chemicals. There appears to be a general popular distrust of the *syrups* of grocers' trade, with an impression that some of them contain dangerous inorganic constituents, left behind from the use of chemicals in their manufacture.

Fourteen samples—ten sugars and four syrups, all selected by Mr. Rossiter, were subjected to an analysis embracing the following inquiries:

1. Special qualitative examination for *lead*, by a method of known degree of accuracy.

2. Special qualitative examination for *arsenic*, with a determination of the least quantity revealed by the process employed.

3. Quantitative determination of the total *ash*, and a full qualitative determination of its constituents, with particular care in looking for tin and zinc.

4. Determination of the *glucose* (lævulose and dextrose).

5. Determination of the *water* in obtaining a constant weight in an air-bath, at about 90°C. The sugars had been previously air-dried by standing in papers in a dry place.

6. Determination of the *specific gravity* of the syrups.

A quest was made for arsenic, because it might be left from the sulphuric acid of starch-sugar manufacture, from the sulphurous acid used to remove lead when lead acetate is employed in bleaching, and possibly from other chemicals or even from zinc or tin apparatus.

All the analyses were performed by Messrs. J. S. Johnson and S. E. Parkill.

1. The examination for *lead* was made simply by treating a solution of the sugar with hydrosulphuric acid gas; this test being more delicate than a test after removing the organic matter by any means. One hundred grams of the sugar or syrup were dissolved in a sufficient quantity of water and treated with the gas for several hours. In working with 10 grains of the solution, Wormley ("Michrochemistry of Poisons," p. 361) found that a solution containing one-250,000th of lead oxide gave a faint brownish tint; containing one-100,000th, a

distinct brownish tint, with resulting turbidity; one-50,000th, a distinct brownish precipitate. As our test was made with 100 grams of the sugar, it must be safe to put the limit of detection, for white sugars, at one part of lead oxide to 200,000 parts of solution (about 66,000 parts of sugar), a proportion giving one grain of metallic lead to about 10 lbs. of sugar. No lead was found in any of the samples.

2. The test for *arsenic* was made by Marsh's operation, with use of sodium-amalgam in alkaline solution of the sugar, the gas being received for some time upon paper charged with silver nitrate. A florence flask of about 500 cc. capacity was fitted with a cork admitting a tube of about one-half inch diameter. A solution of 100 grams of sugar, made slightly alkaline with potassa, was put in the flask and diluted to fill it up to the neck, sufficient sodium-amalgum was added, a disk of filtering paper of about an inch diameter and previously wetted with silver nitrate solution was placed over the tubule of the cork, in place, and the paper covered with a watch-glass. The flask was left undisturbed, with constant slow evolution of hydrogen, several hours. First, ordinary sugars (supposed to be free from poison) were subjected to the operation, and it was found that no reduction of silver or blackening of the paper occurred. Next, different proportions of a thousandth-normal solution of arsenious oxide were added to the sugar solution, in successive experiments, until it was found that one-fifth cc. of the arsenic solution was the least quantity that would cause a distinct and unmistakable blackening of the silver paper. Each cc. of the arsenic solution contained 0·000198 gram of arsenious oxide, or 0·00015 gram of arsenic (as an element). The one-fifth cc. contained 0·00003 gram of arsenic, and this quantity amounts to 0·00003 per cent. of the 100 grams of sugar taken. This percentage gives one grain of arsenic in 476 lbs. of sugar, a *limit of identification* which must be beyond the limit reached through a destruction of the organic matter. Finally, all the samples were tested as above described, and no arsenic was found in any of them. (It should be remarked that, had blackening occurred, it alone would not have been conclusive evidence of the presence of arsenic.)

3. The *ash*, by ordinary systematic qualitative analysis, revealed no other constituents than sodium, potassium, calcium, magnesium, aluminium and iron compounds, and sulphates, chlorides, carbonates and silica. No zinc or tin was found. The ash of Syrup No. 1 consisted

of calcium sulphate, aluminium and iron oxides, and sodium and potassium chlorides. Syrups No. 3 and 4 contained magnesium carbonate.

		Glucose.	Ash.	Water.	Sp. Grav.
Sugars—No.	1	. . .	0·001 per cent.	1·4 per cent.	. . .
	2	2·5 per cent.	0·363	1·9	. . .
	3	5·0	0·140	0·9	. . .
	4	. . .	0·015	0·1	. . .
	5	6·7	0·670	1·4	. . .
	6	. . .	0·039	0·2	. . .
	7	1·0	0·028	0·3	. . .
	8	1·4	0·111	1·6	. . .
	9	0·3	0·010	0·1	. . .
	10	trace.	0·144	0·1	. . .
Syrups—No.	1	31·3	3·295	20·0	1·405
	2	42·1	0·876	18·0	1·418
	3	33·6	2·700	21 0	1·403
	4	22·7	2·900	25·0	1.392

X. Investigations relating to Husemann's Test for Morphia.

When morphia or one of its salts is exposed to the action of concentrated sulphuric acid for twelve to fifteen hours at the ordinary temperature, or for half an hour at 100°C., or for a very short time at 150°C., there occurs (after cooling) a faint violet-red color. If, now (in the cooled solution), there be added a drop of nitric acid, or chlorine water, or ferric chloride solution, or solution of chlorinated soda or chlorinated lime, or a fragment of potassium nitrate or potassium chlorate, there is produced a beautiful blue to violet-red color, soon passing into a dark red. The one-hundredth of a milligram of morphia enables this color to appear with distinctness.—*Husemann's Pflanzenstoffe* (1871), p. 124. Husemann: *Zeitschrift analyt. Chemie*, iii (1864), 149; *Annal. der Chem. und Pharm*, cxxviii, 305. Modification of the test of Erdmann: *Zeitschr. analyt. Chemie*, i, p. 224; *Annal. der Chem. und Pharm.*, cxx., p. 188. Erdmann's reagent is concentrated sulphuric acid with about 0 005 per cent. of absolute nitric acid.

The effect of pure sulphuric acid upon pure morphia was first investigated.[1] Most of the "chemically pure" sulphuric acid shows a trace of nitric acid in "the brown ring test," using a crystal of ferrous sulphate and giving several hours' time to the test. *The purification of sulphuric acid* from traces of nitric acid was tried in three ways: 1. About two fluid-ounces of the acid were heated in an evaporating dish on the sand-bath until the acid itself began to vaporize, when about a grain of ammonium sulphate was added several times, and then the heat continued until the bulk of the acid was reduced to a little less than half

[1] For considerations suggesting this inquiry see "Am. Jour. Phar," xlviii (1876), 62.

of that taken. 2. The same operation was made, substituting crystallized oxalic acid for the ammonium sulphate used before. 3. The sulphuric acid was simply evaporated to one-fourth its bulk without any addition. Each of the three purified samples gave negative results in all "tests for nitric acid." The purification with use of oxalic acid was repeated several times without getting a perfectly colorless product, but the slight brown tint, due to remaining carbon, was scarcely perceptible when a few drops were placed on porcelain. I think the purification with ammonium sulphate is more satisfactory, and sufficiently sure. In all the tests of morphia parallel operations were made with separate use of each of the samples of purified sulphuric acid, and the results were alike for the three. *The purification of the morphia* used in the tests was done by washing a good sample of "morphia, pure," in very fine powder, on the filter: first with chloroform and then with ether, each in repeated portions, and drying.

On treating the purified morphia with the purified sulphuric acid at 100°C. for half an hour, a pink-red color was in each case obtained. The least quantity of morphia giving the reaction distinctly was found to be one-fifteenth of a milligram (0.000064 gram or one-thousandth of a grain).

In each case, after treatment with the sulphuric acid at 100°C. for half an hour, and cooling, the addition of a drop of nitric acid gave a beautiful blue to violet-red color, soon changing to an orange and dark-red color, from which the orange faded out. This test (Husemann's) is certainly more distinctive than the test by hot sulphuric acid alone, but its delicacy is only a little greater. In this investigation the color was not obtained in quite as small quantities as those reported by Husemann, but the reaction appeared distinctly in each trial with one-eighteenth of a milligram (0·000054 gram or one-twelvehundredth of a grain) of the morphia.

Narcotina, with hot concentrated sulphuric acid alone, gave the same reactions that morphia does. In Husemann's test, the color given by narcotina was bright pink-red or carmine, the limit being found at about one-fifteenth milligram of the alkaloid. *Codeina*, treated with pure sulphuric acid at 100°C., gave a blue-purple color. The addition of a drop of nitric acid (after cooling) caused a little change, the color being blue to violet-red (coinciding with that of morphia). *Narceina*

was found to give very little color, either with sulphuric acid at 100°C. or with Husemann's test.

It is perhaps worthy of mention that *brucia*, with concentrated sulphuric acid, even in the cold, gives a light red color. This fact (stated in the books) must be borne in mind in testing for nitric acid by brucia. The color was obtained alike with each sample of purified sulphuric acid used in this work with Husemann's test, the tests being made to settle a doubt whether the reaction given for sulphuric acid with brucia could be due at all to any trace of nitric acid. The color of brucia with sulphuric acid, on warming and treating with stannous chloride solution, undergoes no other change than a gradual fading toward the yellow, but in presence of nitric acid (as is well known) the stannous chloride developes an intense purple.

I am indebted to Mr. H. S. Wyman for performing most of the operations stated in this note.

XI. Microscopic Examination of Ground Coffee and Coffee Extract.

The samples were gathered indiscriminately from the grocer trade of New York City and Ann Arbor, Mich., and subjected to microscopical and chemical examination by Miss M. E. Johnson.

Ground Coffe contained—	Coffee Essence contained—
No. 1, coffee, chicory, wheat.	No. 1, licorice root, wheat, beans.
2, coffee, chicory.	2, chicory.
3, coffee, chicory, wheat, beans.	3, coffee, chicory.
4, coffee, chicory.	4, chicory, burnt sugar.
5, coffee, chicory, wheat, beans.	5, coffee, chicory.
6, coffee, chicory.	

The manufacture of coffee extract suggests the question whether it may be made from unground coffee, with sale of the partly exhausted coffee berry. The exhaustion of unground cinnamon bark is well known, unbroken cinchona bark has been reported deprived of quinia and charged with chinoidin instead, and analysts are alert for finding spent tea. Hager states that roasted coffee contains at the most 20 per cent. of soluble matter ("Untersuchungen," II, 613). Wanklyn quotes Vogel's report of 39 per cent. of soluble solids in roasted coffee, with the remark that it appears rather high. Hassal reports finding the extract of six samples, with an average of 28 per cent. and ranging from 23 to 30. In a single instance, that of a coffee purchased as

Java in the roasted berry, and found not capable of making a satisfactory "cup of coffee," Miss Johnson determined the soluble matter, with several hours boiling, to be 17 per cent. Fictitious berries could not have been present, as a microscopic examination was made. In making coffee as a beverage, not over 10 or 12 per cent. of solids are usually dissolved. It is desirable that the average proportion of soluble matter should be better established, as a standard for analysis.

XII. An Examination of Proprietary Remedies for Asthma and Catarrh.

1. *Kidder's Asthmatic and Fumigating Pastiles.*—In bars, two inches long and one-fourth inch in diameter. To be ignited in a tin receiver and the fumes inhaled. A package of twelve pastiles is put at the retail price of 50 cents. Found to contain: belladonna extract (possibly stramonium or hyoscyamus), potassium nitrate, charcoal (in large proportion), gums, starch, undetermined matters and aromatics. Atropia (daturia or hyoscyamia) was identified by all the general and special chemical tests and by the physiological test. The "extractive" corresponded in behavior and proportion to that of belladonna extract.

2. *Dr. Perrin's Fumigator.*—A moderately fine brown, aromatic powder, with white and black coarse particles. It contains potassium nitrate, pine sawdust and aromatics. The pine sawdust was clearly identified under the microscope.

3. *Carbolate of Iodine Inhalant.*—A liquid having the color of impure carbolic acid and the mingled odors of phenol, camphor and wintergreen. It corrodes cork, but has a neutral reaction. A bottle containing one half fluidounce is put at 50 cents, retail. No other constituents were found except the following: Carbolic acid, camphor (of each about equal parts), and wintergreen oil. The examination for iodine was made, with negative results, as follows: 1. Tests for free iodine; 2. Tests after treatment with various proportions of chlorine, and, again, with various proportions of sodium sulphite, tests after fusing with potassa, the fused mass being dissolved, acidulated and treated with chlorine; 3. tests of the solution from the fused mass by silver nitrate solution. Iodophenol was made and found to respond to the tests above indicated.

4. *Dr. Marshall's Catarrh Snuff.*—A dark-colored uniform powder, with an odor of oil of cedar and a taste of tobacco with aromatics.

An ounce package is retailed at half a dollar. There was found in it tobacco (in a large proportion), asarabacca (?) and oil of cedar. (It may contain other essential oils.) The evidence of asarabacca (Asarum europæum) was wholly by the microscope—in comparison with that drug—and was not conclusive. Starch grains were present, as they are in asarabacca.

5. *Sage's Catarrh Remedy.*—A uniform green powder, with the odor of camphor, faintly modified by that of carbolic acid, and a taste saline and biting and camphorous. A half ounce bottle is sold at half a dollar at retail. An analysis of this nostrum was reported by Mr. Bowens ("Am. Jour. Phar.," xlvi, 265, June, 1874). In this report the proportions of constituents are stated. In our examination, by methods mostly different from those given by Mr. Bowens, the same constituents were identified, with one exception,—Prussian blue was found instead of indigo. Camphor, carbolic acid, hydrastis canadensis, ferrocyanide of iron and chloride of sodium. The golden seal was identified by separation of berberina and hydrastia, and obtaining the tests for each.

The examinations reported in this note were made by Mr. W. Howard Gates, under my observation, and we are both responsible for them.

XIII. "Butter Powders."

Articles sold with a declaration that they make two pounds of butter where but one pound was before. The articles are very simple things to examine, but the declaration (which is evidently the chief consideration sold) is much more difficult to manage. The first article of this species which came to my hand was "Star Butter Powder," and was to be used as follows: To one quart of milk twelve hours old add one pound of butter, warm, add one teaspoonful of the "powder," and churn, when there will be two and a half pounds of delicious fresh butter. The "powder" was made of equal parts of alum and sugar. Lately, the favor of another article came along; I have mislaid its name and directions, but it was some person's "butter powder," and was to be churned with the cream and an addition of milk, when there would be as much again butter as could be obtained without the "powder." This was found to consist of alum and sodium chloride. Now, as to the above-mentioned declaration (to which "butter pow-

ders" are attached, and for which people pay money), a hypothesis might be submitted. The idea is that milk has an important constituent, the most of which is not usually obtained in butter at all, and the aluminium compound in the powder changes this constituent of the milk into an "insoluble modification," and adds it (or multiplies it, with water) into the butter.

XIV. A Nostrum sold as Chinese Medicine.

This was the chief article sold by a "doctor learned in all the wisdom of China," traveling with a wagon and four horses, several vocal and instrumental musicians, a lecturer, and other devices for gaining attention. It was sold at one dollar a bottle, and was found to be made up pretty nearly as follows:

Compound spirit of lavender,	4 fluidrachms.
Spirit of camphor,	5 "
Water of ammonia,	5 "
Oil of sassafras,	½ "
Alcohol,	1½ fluidounces.
Water, to make 4 fluidounces.	

The mixture resembles "Hamlin's Wizard Oil," reported by Mr. Pierron ("Am. Jour. Phar.," Feb., 1877, p. 82), and likewise sold from a wagon drawn by four horses.

University of Michigan, School of Pharmacy, Aug. 14, 1877.

NITRO-BENZOLE IN ALCOHOLIC BEVERAGES.

By Henry G. Debrunner, Chemist.

Among the numerous adulterations to which alcoholic liquors are subjected, coal tar products have until lately been excluded. When it was rumored that the beautiful red color of certain French wines was due to anilin dyes, chemical analysis proved this suspicion to be correct, and large quantities of these wines, thus adulterated, were condemned.

I lately happened to get a sample of a so-called genuine "French brandy" for analysis. It formed a colorless clear liquid, with a remarkably strong smell of oil of bitter almonds. Although termed "brandy," it was said to be made of cherries, and therefore something similar to what is termed "Kirschwasser" in Germany, which really is the product of alcoholic fermentation of mashed cherries. The latter liquor

slightly possesses the above-mentioned smell, but by no means to such an extent as the sample I had for analysis, on which this quality was considered an important proof of its being the genuine article.

As to the origin of this smell, it must be remembered that the kernels of cherries contain amygdalin, $C_{20}H_{27}NO_{11}$, which, through fermentation caused by the nitrogenous emulsin, splits up into sugar, $C_6H_{12}O_6$, hydride of benzole or oil of bitter almonds, C_7H_6O, and hydrocyanic acid, HCN, taking up at the same time two molecules of water, H_2O, according to the following equation:

$$C_{20}H_{27}NO_{11}+2H_2O=2C_6H_{12}O_6+C_7H_6O+HCN.$$

Hence this characteristic smell.

On subjecting my sample to a preliminary examination, I at once suspected an adulteration with nitro-benzole, which suspicion was proven to be correct by the further proceeding of the analysis.

250 cc. were subjected to distillation, the retort being heated in a water-bath and the vapors conducted through a Liebig's condenser. The distillate chiefly consisted of alcohol, while the residue in the retort became turbid and milky as soon as the last traces of alcohol distilled off. At the same time it strongly exhibited the smell previously alluded to. A measured portion of the residue was shaken with ether, which on settling formed two distinct and perfectly clear strata of liquid. The upper one was drawn off and evaporated on a watchglass, leaving a yellow, oily liquid, which was identified as a mixture of nitro-benzole, $C_6H_5NO_2$, and fusel oil or amylalcohol, $C_5H_{11}O$. A further separation of these two may be effected by fractional distillation, for which purpose, however, a larger quantity of the original quantity must be taken.

Nitrobenzole—essence of mirbane—$C_6H_5NO_2$, is formed by the action of nitric acid on benzole, C_6H_6, one of the so-called light oils obtained on distilling coal tar. Its formation is illustrated by the following equation: $C_6H_6+HNO_3=C_6H_5NO_2$ and H_2O. It has so far only been used in the manufacture of anilin and its dyes, cheap fancy soaps, and for the adulteration of oil of bitter almonds, C_7H_6O. Its application for flavoring liquors was entirely new to me. It is easily recognized by its behavior to an alcoholic solution of potassa, as well as by its conversion into anilin and the subsequent production of color-reactions.

If an alcoholic solution of potassa is added to nitro-benzole, the latter

is converted into a dark-brown resinous substance, which is insoluble in water (Maisch). Alcohol and ether dissolve it, from which solutions it can be obtained in yellow crystals on evaporation (Zinin's azoxybenzid). Another reaction, advised by Dragendorff, will also allow the detection of nitro-benzole, viz.: The oily residue of the etherial extraction is dissolved in a small quantity of alcohol; on adding a piece of sodium the liquid will assume a dark-brown color and pasty consistence in presence of nitro-benzole, disengaging at the same time a gaseous substance, the formation of which is due to the presence of alcohol.

As to the conversion of nitro-benzole into anilin and the production of its characteristic color-reactions, I can recommend the following modus operandi from my own experience:

A small quantity of the etherial extract of the residue on distillation, previously alluded to, is placed in a test-tube and evaporated to dryness at about 100°F. A few drops of dilute hydrochloric acid and a small quantity of very fine iron filings or ferrum hydrogenio-reductum, together with a sufficient quantity of water, are then introduced in the same test-tube. Nitro-benzole, if present, thus will be converted into anilin by the action of hydrogen in statu nascendi, according to the following equations: $3Fe+6HCl=3FeCl_2+3H_2$; $C_6H_5NO_2+3H_2=C_6H_7N+2H_2O$; or expressed in one equation: $C_6H_5NO_2+6HCl+3Fe=3FeCl_2+C_6H_7N+2H_2O$. As soon as the oily drops of nitro-benzole have disappeared—no matter whether the iron is totally dissolved or not[1]—the supernatant liquid is poured off into another test-tube. It consists of ferrous chloride, $FeCl_2$, and hydrochlorate of anilin, C_6H_8NCl, or $[C_6H_5.NH_2.HCl]$. On addition of caustic soda solution iron precipitates as ferrous oxyhydrate, while anilin is regenerated and can be extracted and separated on shaking with ether, etc., in the usual manner. The etherial extract is evaporated on a watchglass, leaving an oily residue of anilin, which, on addition of a few drops of hydrochloric acid and a small crystal of potassic chlorate, $KClO_3$, is converted into a beautiful blue pigment. The color changes gradually into a light green and disappears entirely in a short time, particularly in presence of small quantities of anilin, as in this case. By placing the

[1] It must be remembered that anilin is strong enough a base to decompose ferrous and ferric salts, and therefore will be in the above solution.

watchglass on a white sheet of paper I was able to detect minute quantities of said body.

Sulphuric acid and potassic bichromate produce a similar reaction; but this test is less reliable, on account of the reduction of chromic acid to chromic oxide by means of organic bodies, which also yields a green solution and thus may give rise to errors.

According to Taylor, nitrobenzole is a narcotic poison, producing death by paralysis, and is particularly dangerous if its vapor be inhaled; fainting and illness for some time has been observed from the use of soap flavored with it in taking a warm bath.

The modus operandi for preparing this liquor was probably as follows: A common grade of alcohol is mixed with its volume of water and flavored with about half a fluidounce of nitrobenzole to the gallon of liquor.

Two nitro-compounds have now already been detected as adulterations in alcoholic beverages: picric acid or trinitrophenol in beer, and nitrobenzole in this "brandy." What next? Nitro-glycerin?

Pittsburgh,
Black Diamond Steel Works, Aug. 14, 1877.

DISPENSING PRESCRIPTIONS.

By Andrew Blair.

Accuracy in receiving, compounding and delivering prescriptions to customers is one of the most responsible duties of the apothecary, and one that receives less attention than it should, and consequently, sometimes occasions errors that are more or less injurious to the apothecary or patient, as the case may be.

Every apothecary in his early business training should be educated to accuracy in compounding prescriptions, as also every other mixture or preparations; but the "receiving and delivering" of a prescription to a customer at the counter is also a very important duty which usually does not receive the care and attention it deserves, and neglect of which often brings trouble and perhaps injury of reputation to the apothecary, and sometimes serious or injurious results to the patient.

Any suggestion, therefore, that can have the least tendency to check errors or mistakes in this department of our business should be received with favor by those interested.

Apothecaries (even those doing a small business) frequently have two or more prescriptions on their counter at one time waiting their turn to be compounded. If a proper record has not been taken of each, when received, it is possible every one may not be delivered to the persons to whom they properly belong, and one of the customers may be handed a prescription that belongs to another. Suppose such was the case, and one party should get a medicine totally different from the one he or she should have received; any apothecary can understand the perhaps serious consequences to the patient and the embarrassment of his relations with the physician as well as the patient in a business point of view. Some will say, perhaps, the patient should have examined the label to see if the directions, doctor's name, etc., were correct.

People usually presume that a medicine is all right, and trusting to their memory the verbal directions of the doctor, or merely glancing at the label to see if it is a teaspoonful or tablespoonful for a dose, think either sufficient.

The following custom has been in operation with the writer for some time and found to work well.

When a new prescription is received from a customer at the counter, the following memorandum is put on the back of it:

The name of the person for whom it is; state if waiting, or to be sent, or to be called for; if to be sent, give the address; if to be called for, state the time; if paid for, or to be collected, or to be charged. If the prescription is an old one, to be repeated, the memorandums are put on a blank form, as follows, and is handed in to the

NAME.....
ADDRESS.....
IS IT PAID? (YES OR NO) IS IT TO BE SENT? (YES OR NO)
RECEIVED BY.....
COMPOUNDED BY.....
NOS. OF ℞.....PRICES.

prescription department (which is separated from the other part of the store by glass partition), and the prescription clerk has no occasion to ask any questions about it, as all the necessary information is attached to it, and he can compound and deliver it to the customer, or send it, as the case may be, without consulting the one who received it.

The whole form is simple, takes but little time and insures accuracy. It is particularly useful where there are several clerks in a store, as it traces to the proper one any error in the instructions given by the customer to the clerk who receives it, also any error in compounding it.

Frequently prescriptions are sent by servants or youthful messengers to the drug store to be prepared and taken to the patient. It often happens that two or more such individuals are waiting at the same time, and sometimes do not give sufficient consideration to the importance of giving attention to any questions asked them. An example: You have a prescription finished and ready to hand to one of the customers waiting. You ask one "are you waiting for Mr. Johnson's prescripiion?" Answer, "yes." You very naturally give the prescription, thinking it is correct, and the customer leaves your store; when you come to hand customer No. 2 his prescription, you find a mistake has occurred by customer No. 1 thoughtlessly answering yes, instead of no, having in mind the thought that he or she was waiting for some medicine and this must be it. The writer has known of several such cases.

How can this kind of mistakes be avoided? Ask the customer, *whose medicine are you waiting for?* This occasions reflection (trifling though it be), on the part of the customer, whom it is reasonable to suppose will invariably give the correct name to such a question.

Every apothecary is familiar with the extra labels frequently put on prescription bottles, such as "for external use only," "shake before using," "poison," etc. There are cases occurring every now and then for which none of these will answer, viz.:

℞ Tr. Aconite Rad., ... ℥i

Sig. 5 to 10 drops as directed.

You hesitate to put a poison label on this lest you unnecessarily alarm the patient, as it is very apt to do in many cases of nervous affections, who may think either the physician or druggist has made a mistake, as the doctor did not say anything about it being poison.

Still a faithful apothecary does not wish to send it out without some mark to attract attention, so that in the accumulation of family medicine bottles this one may not be picked up and used hastily for some other that might result to the injury of some one.

A "use with care" label frequently answers the purpose.

Then again, there are a class of prescriptions that contain poisonous doses if taken into the stomach by the ordinary tea or tablespoonful.

Sometimes these have directions, "use as a gargle," or "use as injection," or "external use," and very often have only "use as directed." In most of these cases the apothecary can tell the use that is to be made of them, but he should not allow the preparation leave his store store without some mark of caution, still he does not like to use a *poison* label for the same reasons as noted above.

The following suits such cases very well: "caution, this is poison if taken into the stomach," or "caution, this is not to be swallowed."

Keeping poisons, such as morphia, strychnia, etc., in a separate apartment or closet is a rule that should be adopted in every apothecary store. The importance of this is too plain to every apothecary to need any comments. The writer knows of an arrangement that has worked well for several years and answered the purpose for which it is intended. It consists of a closet with double doors, purposely placed in an awkward position, and opened and closed in a very inconvenient manner. The object of this is to attract the attention of the operator and thereby incline him to give special attention to what he is doing; one of these doors is constantly forced outward by a spring, the other door overlaps it at the centre and has a fixture on it that attaches itself (when closed) to a spring hook inside of the closet, which is operated by a cord. As soon as the cord is pulled the hook is lifted, and both doors fly open.

To shut the closet it is necessary first to close the door with the spring attachment, and hold it till the other door is closed upon it and the hook has caught. You cannot possibly shut the spring door unless the other one is *properly closed also.*

The matters briefly alluded to in this article may seem trifling to some, but they are important and necessary to the successful carrying on of the apothecary business, especially as the public expect so much of the apothecary, it requires him to employ every possible device to prevent an improper use of the medicines dispensed by him.

AMMONIUM CARBONATE and FAHRENHEIT UP in the NINETIES.

By Hans M. Wilder.

A friend of mine tells the following: Came a prescription calling for 2½ drachms of carbonate of ammonium in 1½ fluidounce of syrupus acaciæ. When made it was poured into the bottle and corked; after

a few minutes the cork flew out, and nearly half the contents were thrown out. Thinking that the syrup in question perhaps had become acid, it was extemporized with powdered gum arabic and simple syrup; again an explosion. Simple syrup gave a similar result, and a trial with only distilled water went no better. It became clear now that the decomposition of the salt was solely due to the high temperature. By using half ice water and syrupus acaciæ no evolution of carbonic acid gas took place.

It would be interesting to learn whether similar mishaps have been experienced by other pharmacists.

The question arises, whether physicians will put up with this quite unavoidable loss of carbonic acid gas, or whether they can forego the use of carbonate of ammonium in summer time. One thing seems certain, that concentrated solutions of this salt have to be made and kept with ice. (Concentrated: 1 part carbonate of ammonium requires 4 parts water.)

LIQUOR POTASSII ARSENITIS.

By John C. Wharton.

In some of the old editions of the U. S. Pharmacopœia this preparation is directed to be made by dissolving *sixty-four grains* each of *arsenious acid* and *carbonate of potassium*, by the aid of heat, in twelve fluidounces of distilled water, and after solution adding half a fluidounce of spirit of lavender compound and sufficient distilled water to make the cold solution measure one pint.

In the last edition of the U. S. P. the formula requires that *bicarbonate of potassium* shall be substituted for the carbonate above referred to, and to effect the solution of the arsenious acid and bicarbonate of potassium by boiling them with half a fluidounce of distilled water, then adding distilled water twelve fluidounces, compound spirit of lavender half a fluidounce, and lastly sufficient distilled water to make the cold solution measure one pint.

The latter formula is doubtless better than the former, in at least two particulars. It requires no excess of alkali, in fact if both acid and alkali are of theoretical purity, there is a deficiency of the bicarbonate of potassium to the amount of nearly one grain, and sixty-five grains of that salt would be the proper amount to be used. An improvement in the manipulation is made by the use of only half a fluid-

ounce of water instead of twelve fluidounces, as a more concentrated solution of the potassium salt is formed and hastens the action during the heating process. The substitution of the bicarbonate for the carbonate is perhaps of no great importance, except as lessening the alkalinity of the finished product, as above noticed, and furnishing a slightly purer salt, practically of no advantage to the preparation.

There still seems room for improvement, and the following process is offered as such. Its merit consists in easy and rapid execution and simplicity of apparatus required, also the large amount that may be produced with vessels of small capacity.

Take of	Arsenious acid in small pieces,	*sixty-four grains.*
	Potassa (hydrate, fused),	*thirty-six grains.*
	Compound spirit of lavender,	half a fluidounce.
	Distilled water, a sufficient quantity.	

Rub the arsenious acid to a fine powder in a small glass or porcelain mortar, add the potassa and *one fluidrachm* of distilled water and triturate thoroughly together until a slightly creamy solution is formed. Then carefully pour the yet imperfect solution into a test-tube or small evaporating dish and apply heat until perfect solution is effected. Pour the hot solution carefully back into the mortar, and stir it with the pestle to take up the portion of syrupy liquid that adhered to their surfaces in the act of first emptying the mortar. Should the hot solution not effect complete solution of the remainder in the mortar, return the mixed liquids into the test-tube, apply heat, and repeat the rinsing of mortar and pestle as before. Proceed thus till all the arsenious acid is completely dissolved, then add twelve fluidounces of distilled water, rinsing mortar and pestle and test-tube with the same, and mix the different portions in a suitable graduated measure. Then add the compound spirit of lavender, and finally sufficient distilled water to make the whole product measure one pint; filter.

By this method I am sure that the whole may be finished in ten minutes or less, except filtering, which is advisable in order to remove a very little silica that is nearly always a constituent of hydrate or caustic potassa. The gain in time and facility of making the solution arises principally from two sources; in the first place a most potent form of the alkali is substituted for a weak one, and, secondly, by the use of a very little water a decidedly concentrated solution of the potassa is brought in contact with the arsenious acid. But there are two other,

rather incidental, advantages. One of these is that a considerable heat is produced by the action of the water on the fused potassa, which aids solution; the other consists in the readiness with which the arsenious acid may be triturated with the concentrated solution of potassa. This is due to the "syrupy" consistence of the liquid, and as solution rapidly progresses, the viscidity increasing makes the admixture quite an easy matter. It will present a great contrast in this respect to the behavior of the arsenious acid in former processes.

NOTE on the INCOMPATIBILITY of STRYCHNIA with certain SALINE SOLUTIONS.

By A. B. Lyons, M.D.

The solubility of the various salts of so powerful a remedy as strychnia ought to be familiarly known to all physicians and pharmacists. I find, however, that the text-books in common use are remarkably reticent on the subject. That the sulphate of strychnia is preferred to the alkaloid itself, on account of its greater solubility, and that the iodide of strychnia is a salt sparingly soluble in water, are about the only facts elicited by consulting Wood and Bache.

My attention was directed to the subject by a case of accidental poisoning by strychnia, which lately came to my knowledge. The circumstances were these: A lady had been taking medicine from a bottle prepared after the following prescription:

℞ Pot. brom., ... ℥ii
Strichniæ (*sic*), ... gr. ii
Syp. auranti.
Aqua dist. (*sic*), ... ää ℥iv
M. Sig. A teaspoonful every 4 hours.

No disagreeable effects had been produced by the medicine, of which, if I am rightly informed, she had already taken up one full bottle. Soon after swallowing the last dose, however, from this bottle, she was attacked with spasms, and exhibited all the symptoms of poisoning by strychnia. On examining the glass from which the medicine had been taken, and which had been afterwards filled with water, I found a much larger proportion of strychnia than should have remained adhering to the glass, had it been in solution in the proportion called for by the prescription, viz.: about 1 : 1800. Evidently, a portion of the

strychnia had either never been dissolved, or had separated from the strongly saline solution after it was dispensed. The latter I suspected to be the truth, and I accordingly made a few experiments, demonstrating the possibility at least that this was the explanation of an accident that seemed to inculpate either the physician or the apothecary.

Having prepared a neutral solution of strychnia sulphate, containing one grain to the ounce, I attempted to dissolve in it potassium bromide to saturation. A bulky crystalline precipitate of a strychnia salt (doubtless hydrobromate) at once formed. With smaller proportions of the bromide the precipitation did not take place so rapidly. When the quantity did not exceed two drachms to the ounce, crystals formed only after an interval of some minutes, and the same result was obtained in experiments where the quantity of strychnia was reduced.

The precipitated salt of strychnia was not perceptibly redissolved by the addition of a considerable excess of hydrobromic or of sulphuric acid.

Substituting sodium bromide for the potassium salt, I obtained similar results, although the strychnia did not appear to be so completely thrown out of solution as by the latter salt. Potassium iodide, three drachms to the fluidounce, produced at once a crystalline precipitate in a solution containing one grain of strychnia to the ounce. Sodium chloride gave results very similar to those obtained from potassium bromide. Thirty per cent. of the salt, dissolved in a one grain solution of strychnia, rendered it quite thick with the precipitated salt. Even eight per cent. induced a prompt crystallization of the strychnia salt.

Finally, I compounded the prescription given above strictly *secundum artem*, dissolving first the strychnia, then the potassium bromide in water, and adding the syrup; in a short time a crystalline precipitate began to form, and now, at the end of twelve hours, there is a considerable sediment in the bottom of the bottle, which doubtless contains a considerable proportion of the strychnia.

I have made a few experiments with other salts, such as potassium nitrate, sodium sulphate, etc., but do not find that they diminish the solubility of strychnia to the same extent as the chlorides, bromides and iodides. I propose to give the whole subject a more careful examination, and to communicate the results at some future time; but meanwhile I have judged the facts already observed to be of sufficient importance to both physician and pharmacist to demand that they be

made widely known, even in the crude form in which I have presented them.

The practical conclusion I wish to emphasize is, that it is unsafe to prescribe strychnia in solution with iodides, bromides, or even chlorides, in anything approaching a saturated solution. If such prescriptions are dispensed, the directions to "shake the bottle" ought to be made so prominent that they could not possibly be disregarded.[1]

Detroit, Mich., Sept. 5, 1877.

ON JURUBEBIA, THE ALKALOID OF THE SOLANUM PANICULATUM, Lin.

By Francis V. Greene, M.D., U.S.N.

In the collections of Brazilian medicinal plants at the Exposition in Paris, in 1867, the Brazilian National Exposition in Rio de Janeiro, in 1875, and the Centennial Exhibition in this city, were displayed several specimens of the berries of the Jurubeba plant, the expressed juice of which has long been in use in domestic practice in Brazil in affections of the liver and spleen, and likewise in dropsies, vesical catarrh and diseases of the skin. In consequence of the excessive bitterness of the juice, and the impossibility of procuring the fresh fruit at all periods of the year, the Brazilian pharmacists, and more particularly Ferreira Maia & Co., of Pernambuco, have for some years prepared from the berries an extract, syrup, wine and plaster, all of which were to be found among the Brazilian pharmaceutical preparations exhibited at the above-mentioned expositions.

Jurubeba, which is also known as the *juripeba*, *jupeba* or *jubeba*, is the *Solanum paniculatum* of Linnæus, and one of the two solana described by Pison (Brazil, 85) under the name of *juripeba*, the other being, according to Dunal.(Dict. Univ. Mat. Méd., 1834, vol. vi, p. 422), the *Solanum toxicarium*, growing in Guiana, and used by the natives as a poison. Spix and Martius state that "the juice of the crushed leaves and fruit of the juripeba is used in obstructions of the abdominal viscera, particularly of the liver, and in vesical catarrh. Several other species of solanum are used in like affections, and are applied fresh to the surface, with an ordinarily favorable effect on the cicatrization of

[1] A case of poisoning by strychnia, under somewhat similar circumstances, was reported in "Amer. Jour. Phar.," 1870, p. 309.—Editor.

wounds and ulcers" (Jour. de Chem. Méd., v, 423, from Voyage to Brazil). Merat and De Lens (Dict. Univ. Mat. Méd., vi, p. 419) refer to the use of the juice of the leaves and fresh fruit of the jurubeba in the Antilles, where it is known as the *croc de chien* and is much esteemed in the treatment of the affections mentioned above. They also state that Pison had used the decoction of the root with decided success in the treatment of dropsical affections. In his "Herbarium Floræ Brasiliensis, Monachii," 1837, p. 157, Dr. C. T. Ph. de Martius states that the Solanum paniculatum, Lin., is the true jurepeba of Pison, a drawing of which is given in the latter's work on Brazil (p. 84) and also in Marcgraff (p. 89, edit. 1648). He also states that there is a variety with sub entire leaves, which is described in Velloso (Flor. Flum., t. ii, p. 124) under the name of *Solanum jubeba*, which signifies soft berry, from the words *juia*, berry or fruit, and *beba* or *peba*, soft.

The jurubeba, which is described by Linnæus (Spec. Plant., vol. i, p. 267), by Aublet (Plant. de Guiane, vol. i, p. 216), more fully by De Candolle (Pro., xiii, p. 197), and in the Universal Herbal (edition 1820, vol. ii, p. 597) of Thomas Green, under the name of the *paniclea nightshade*, is a plant with a fruticose and prickly stem; leaves, according to the variety, of which there are two, either cordate sinuate, or

a Berry of the jurubeba plant (Solanum paniculatum, L.), natural size.
b Vertical section.
c Transverse section, with seeds in situ.
d Same, with seeds removed, showing membranous character of the dissepiments.

lobed or incised; flowers terminal, disposed in panicles, and fruit a four-celled spherical berry, each cell containing from twelve to fifteen small flattened seeds of a light-brown color, imbedded in a semi-transparent juicy pulp; pericarp thin and of an olive-green color. According to Chernovix (Formulario, 9th edit., p. 508) all parts of the plant contain mucilage and a bitter principle. The plant grows in the vicin-

ity of Bahia, at Cape Fio, in the provinces of Pernambuco, Ceara, Minas Geraes, Santa Catharina, and in other parts of Western Brazil. It flowers in December.

The term *juripeba*, by which the Solanum paniculatum is known in some parts of Brazil, has also been applied by botanists to a large number of solanaceous plants. A reference, however, to De Candolle (Pro., xiii, p. 30) will show that although the juripeba and the S. paniculatum are both placed in section II of the solanaceæ, the former come under the sub-section Euleptostemonum, while the latter appears among the Torvaria. Furthermore, *jurubeba* or *jubeba* must not be confounded with another Brazilian plant, the *jumbeba*, which belongs to the cactaceæ.

At the close of the Centennial Exhibition I received, through the kindness of the Brazilian Commissioners, a few ounces of the jurubeba berries, and likewise small quantities of a syrup, wine and plaster of jurubeba, prepared at the Pharmacia Americana, of Ferreira Maia & Co., Pernambuco. For the purpose of determining whether the berries and the preparations made therefrom contained solania or other alkaloid, I have lately examined the different articles as thoroughly as the limited quantities at my disposal would permit, with the following results.

As a preliminary examination of a small quantity of the dilute alcoholic liquid, in which the berries were preserved, rendered it probable that solania was present, the crushed berries, amounting to less than three ounces, were exhausted with 75 per cent. alcohol, and, the preserving fluid having been added, the whole liquid was filtered and evaporated to a soft extract, which was exhausted with water acidulated with acetic acid, and the solution filtered. To this filtrate ammonia was added in slight excess; the grayish precipitate produced, was separated by filtration, washed, dissolved in acetic acid, and reprecipitated by ammonia, by which treatment it was rendered nearly white. It was then dissolved in dilute sulphuric acid, and the solution placed over sulphuric acid under a bell-glass. After the evaporation of the liquid, there remained a slightly yellowish mass, composed of prismatic crystals, which on being ignited on platinum foil left a very considerable residue. Further examination of these crystals proved that they were composed of ammonio-phosphate of magnesia, with a small amount of coloring matter.

The filtrate of the precipitate with ammonia was then evaporated to a small bulk, and extracted with distilled water acidulated with acetic acid; the filtered solution was evaporated to a soft extract, treated with sodium bicarbonate in excess, and shaken with ether. The etherial solution was neutral to test paper. On evaporating the ether, there remained a semi-transparent viscid mass, with a bitter taste and slightly aromatic odor, sparingly soluble in water, but readily soluble in ammonia, alcohol and chloroform. Sulphuric acid added to a small portion produced a dark-red color, nitric acid gave merely a darker shade of yellow. On adding very dilute hydrochloric acid to the mass, it dissolved, with the exception of a small quantity of a dark resinous substance. The filtered solution gave the following indications of the presence of an alkaloid: With phosphomolybdic acid it produced a yellow precipitate, which was dissolved by ammonia, giving a blue solution that became colorless on boiling; with sodium phospho-tungstate it gave a white flocculent precipitate; potassio-cadmic iodide also threw down a white precipitate (distinction not only from solania, but from glucosides and neutral substances in general); potassio-mercuric iodide formed with it a yellowish-white precipitate, soluble in acetic acid and in excess of the precipitant; with iodine in iodide of potassium solution it gave a yellow precipitate, and with tincture of galls a white precipitate, soluble in acetic acid, insoluble in ammonia. A yellow precipitate was also afforded by auric, but none by platinic chloride. Nitrate of silver and potassio-cupric sulphate gave white precipitates, which were not reduced by heating. Mercuric chloride and perchloride of iron threw down white precipitates. Picric and chromic acids did not yield precipitates.

The remainder of the solution evaporated over sulphuric acid left a slightly yellow semi-transparent mass, containing numerous stellate groups of acicular crystals, which, dissolved in distilled water and separated from a small quantity of insoluble dark resinous matter, recrystallized of a somewhat lighter color.

The preparations of the berries were then examined to ascertain whether they contained a substance giving the same reactions. The wine (about four fluidounces) was evaporated to a soft extract, which was extracted with distilled water acidulated with acetic acid, and the filtered solution reduced to a small bulk, treated with sodium bicarbonate in excess, and extracted with chloroform. The plaster, which was evidently composed of an extract of jurubeba and lead plaster, was

digested with dilute hydrochloric acid, the precipitated chloride of lead separated by filtration, and sulphuretted hydrogen gas passed through the filtrate to remove all traces of the lead salt. The filtrate from the sulphide of lead was then treated in the same manner as the wine, chloroform being used in this case also as the solvent of the nascent alkaloid. To the syrup (four fluidounces), largely diluted with water, phosphomolybdic acid was added as long as a precipitate was produced. The supernatant liquid having been decanted, the precipitate was washed with water containing phosphomolybdic and nitric acids, and solution of hydrate of baryta added to it while still moist until the mixture gave a decided alkaline reaction. It was then treated with carbonic acid gas, evaporated to dryness on a water-bath, and the alkaloid extracted from the carbonate of baryta by alcohol. The alcoholic solution was found to be neutral to test paper, as was also the case with those obtained from the wine and plaster by means of chloroform. The residues from these solutions, which were precisely similar in appearance to those obtained from the berries, were treated with very dilute sulphuric acid, and the filtered solutions tested, with the result of giving reactions that corresponded exactly with those furnished by the solution of the chloride derived from the berries. Crystals were not obtained by evaporating these solutions, the residues being semi-transparent, amorphous, resinous masses of a light yellow color.

Although the quantity of material operated on was too small to admit of the separation of the active principle or its salts in a sufficiently pure state to determine either their precise chemical characters or to investigate their physiological action and therapeutic effects, the above experiments show conclusively that the substance extracted by the processes mentioned differs in many respects from the glucoside solania and the known alkaloids of the solanaceæ. I would therefore propose the term *jurubebia* to designate the alkaloid contained in the berries of the Solanum paniculatum.

An examination of the ash of the jurubeba berries proved that it was composed mainly of lime and magnesia, in combination with carbonic and phosphoric acids.

THE STRENGTH OF TINCTURA OPII.

By John M. Maisch.

Attention has been repeatedly directed to the variability in the strength of some officinal preparations. Quite a number must be expected to differ more or less, even if prepared by precisely the same process, the variation depending upon differences in the constitution of the crude drugs, which are sometimes very considerable, as is well known to be the case with opium. Since, however, the Pharmacopœia directs dry opium to contain not less than 10 per cent. of morphia, the morphia strength of the galenical opium preparations should not fall below that standard if the valuation of opium was not neglected by many pharmacists. But even with the same opium there is a possibility of arriving at a deficiency in strength, amounting to from 6 to 10 per cent., if the drug be employed merely air-dry or be previously dried at or near the temperature of boiling water until it ceases to lose weight. Tincture of opium being very frequently used as a domestic remedy, some apothecaries have adopted the dangerous practice of keeping on hand two kinds, one made according to the Pharmacopœia formula, intended for dispensing in prescriptions, and another weaker tincture for ordinary sales. The latter is then always diluted, and occasionally to such an extent that it bears little resemblance to the officinal tincture except in name, the deficiency in color being compensated by the addition of licorice or caramel; laudanum sold by country storekeepers is very generally of the latter class.

The strength of tincture of opium as ordinarily sold has been the subject of investigation by three students of the Philadelphia College of Pharmacy, class 1876–77. Mr. Jos. Stahle Smith merely determined the amount of extract left on the evaporation of one fluidounce of the tincture, five samples giving the following results: 21·5, 15, 11·5, 9·5 and 8 grains. Each fluidounce represents 37·5 grains of dry opium, which on an average yields 60 per cent. or 22·5 grains of extract; the presumption therefore is that of the five samples examined only one was made in accordance with the Pharmacopœia.

Mr. Wm. H. Llewellyn ascertained not only the amount of extract, but separated also the morphia from one fluidounce of commercial laudanum, using for the latter operation a modification of Staples' process; his results were as follows:

Extract from 1 fluidounce,	15·	15·	16·	15·50	23·25	28·75	30·	32·	37·	39·50 grs.
Morphia " "	4·	3·75	3·	3·25	2·	1·75	1·	1·	·5	trace.

Opium of officinal strength should yield 3·75 grains of morphia per fluidounce of laudanum. While some of the samples come up to this requirement, it is noteworthy that they fall short in the amount of extractive matter as usually met with in Smyrna opium; on the other hand, it is plain that at least one-half of these tinctures, which are very deficient in morphia, were artificially colored, with the view of imparting an appearance of strength which they did not possess.

Another series of experiments with laudanum sold at retail was made by Mr. Burt P. Gates, who determined the specific gravity at 60°F. by means of a 1000-grain bottle, and made two morphio-metric assays, following Staples' process with some modifications; his results are tabulated as follows:

Specific Gravity.

·965 ·952 ·962 ·956 ·958 ·955 ·953 ·949 ·956 ·943 ·947 ·956 ·939 ·950 ·881

Morphia per fluidounce.

3·85 3·70 3·54 3·39 2·96 2·62 2·77 2·46 2·16 2·08 2·00 1 85 1·63 1·39 0 77

Percentage.

10·3 9·9 9·4 9·0 7·8 7·0 7·4 6·6 5·7 5·6 5·3 4·9 4·4 3·7 2·1

Only three of these samples can be assumed to have been made from well dried opium; five appear to have been made from imperfectly dried or from more or less moist opium; the remaining seven, of which five are also deficient in density, have apparently been made of less opium than officinally directed.

CALCII PHOSPHAS PRÆCIPITATA.

By Ed. Hirschsohn.

It having been for a long time a desideratum to find a process the product of which fulfills the following conditions: constant composition, crystalline texture, easily soluble in diluted acids of about the strength of the gastric juice (for instance 0·03 per cent. muriatic acid), and the largest possible yield, Dr. Dragendorff induced Hirschsohn to examine into the merits of the different methods.

After mentioning that Stoeder and Opwyrda came to the result that the "calcined bones" process (see among others the United States Pharmacopœia) gives a somewhat satisfactory product only by precipitating the strongly acid solution with ammonia in slight excess, and that

they strongly recommend the chloride of calcium and phosphate of sodium process, H. gives the result of his experiments as follows:

Dissolve 100 parts anhydrous chloride of calcium in 4 parts of cold water and 187 parts phosphate of sodium ($Na_2HPO_4+12H_2O$) in 30 parts of cold water. Pour the phosphate solution at once (not gradually) into the chloride solution, stirring continuously, and throw on a filter as soon as practicable; wash and dry at a temperature not exceeding 90 to 100°F. The yield will never be more than corresponding to half the quantity of chloride of calcium used; the composition of the salt will be constant ($CaHPO_4+12H_2O$) and only after being heated to about 230°F. it will be converted into $CaHPO_4+2H_2O$. The precipitate is quite bulky, 35 grams filling a 100 grams measure, is easily separated from the liquid by filtration, and easily washed.—H. M. W., extracted from *Ny pharm. Tid.*, 1877, p. 259.

THE TWENTY-FIFTH ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

FIRST SESSION, Tuesday, September 4.

The opening of the meeting was delayed until four o'clock, on account of the late arrival of the boat from Niagara River. By that time a goodly number of members had reached the Council Chamber of the City Hall, where the sessions were to be held, and President Bullock called the meeting to order; the Secretary, Treasurer and Chairman of the Executive Committee were present to attend to their duties, and H. S. Wellcome acted as Chairman of the Business Committee.

Alderman Wright, of the city of Toronto, stepped forward, and, after apologizing for the absence of the Mayor, extended a cordial welcome to the members and their ladies, expressed the hope that the meeting would be a satisfactory one, and formally placed the Council Chamber and the adjoining rooms at the disposal of the Association. President Bullock responded and expressed thanks.

Messrs. R. S. Woodruff, of Connecticut, A. B. Petrie, of Ontario, and E. T. Dobbins, of Pennsylvania, were appointed a committee to examine the credentials. While that duty was being attended to the President read his annual address, dwelling upon the fact that this was the first meeting held under the folds of the British flag, and that science knew no geographical and political boundaries; he then gave a sketch of the rise and progress of pharmacy, and referred briefly to its influence on the development of chemistry and the benefits derived by it from that science, concluding with a review of some of the questions to come up for discussion and final disposition.

Mr. Sheppard moved the thanks of the Association for the able and interesting address, and proposed the appointment of a committee of three to take into consideration and report on such of the President's suggestions which may require action by the Association. The motion was carried.

A letter was read from Mr. Benj. Lyman, of Toronto, regretting his inability to attend the meeting, he being unavoidably absent in Europe. An invitation by Messrs. Godderham & Worts to visit their extensive distillery was accepted with thanks. Invitations were extended to Prof. Henry Croft and the other members of the faculty of the University of Toronto, also to the medical profession who may feel interested in the proceedings, to attend the sessions.

The Local Committee of the meeting of 1876 presented a report through Dr. A. W. Miller, tendering to the Association an unexpended surplus amounting to $525, as the foundation of a "Centennial Fund," under the conditions that a like amount be raised by the Association within one year, and that the interest of this fund be used solely for aiding original investigations. The report was accepted and referred to the Committee on the President's Address for consideration and report. This committee was then constituted as follows, E. P. Nichols, of New Jersey; John Ingalls, of Georgia, and T. J. Casper, of Ohio.

The Committee on Credentials reported delegations from seven colleges of pharmacy, four alumni associations, five State and four county and city pharmaceutical associations. Members of the Chicago College of Pharmacy, and of the Pharmaceutical Associations of Michigan and South Carolina, from which bodies credentials had not been received, were requested to act as delegates.

The reports of the various standing and special committees were called for and laid upon the table, after which the Nominating Committee was constituted by appointing on it one member from each delegation, and through the chair the following five members from the Association at large: Messrs. Edm. Gregory, of Ontario; Z. J. Belt, of Delaware; J. A. Miller, of Pennsylvania, and Wm. Neergaard and A. S Lane, of New York.

Mr. Kennedy read the annual report of the Executive Committee and J. M. Maisch the supplementary report of the Secretary; both reports dwelled upon the fact that there is considerable room for improvement in the financial affairs, and suggested the creation of a sinking fund. The reports were accepted and referred to the Committee on the President's Address.

Mr. William Elliot, President of the Ontario College of Pharmacy, extended invitations to the members and their ladies to several entertainments and to an excursion to Lake Rosseau. The following inviation was likewise presented:

The Junior Pharmacists of Toronto request the pleasure of your company in camp at Sparrow Lake, to spend a few days under canvas. Leaving the city at 7 A. M., Saturday, 8th inst., *via* Northern Railway to Severn Bridge, where boats will be in waiting to convey the party to the camping ground. A supply of fishing tackle will be provided, and it is hoped that two or three days may be agreeably spent in botanizing, geologizing, piscatorializing, etc.

To such as may be strangers to a Canadian camp life, it would only be fair to give an idea of the hardships to be encountered, lest our visitors might be disappointed.

"Firstly."—No feather beds or mattresses, but two blankets, and plenty of cedar brush; this can hardly be called a hardship, because it makes a soft bed.

"Secondly."—No sofas or chairs, but *very* firm seats may be secured, in fact are already secured, free of charge—the rocks are very hard.

"Thirdly."—Pabulum, not what might be called *first-class hotel fare*, but three meals a-day, will be selected from the following:

INFUS. ADDENDA.

Dec. Caffeæ c. Lacto et Sacch.,	Inf. Theæ,
Rasuræ Porci,	Solanum Tuberosum,
Querquedula Ferox,	Tetrao Umbellus,
Numenius Aquata,	Trinza Variosa,
Perca Fluvialis,	Perca Labrax,
Esox Lucius,	Panis,

Biscocti, etc.

And other dishes, to be gathered from the forest and streams, depending to a large extent on our own activity and skill.

These are the hardships.

In place of dessert, you are expected to take in the surrounding scenery, as being more digestible. It is not essential to open the mouth for this purpose.

Campers leave the railway at Severn Bridge. Fare for the round trip, $3.00.

N.B.—Committee must have acceptances by Wednesday at noon at latest, to make arrangements.

No. 2. N.B.—Smoking allowed.

The invitations were greeted with applause and accepted with thanks.

After the appointment of the following Committee on Specimens: Messrs. H. J. Rose, Toronto; G. F. H. Markoe, Boston; Chas. Rice, New York; T. R. Baker, Richmond, and A. E. Ebert, Chicago, the Association, on motion, adjourned until Wednesday morning at 9 o'clock.

SECOND SESSION, Tuesday Morning, September 5th.

After the reading and approval of the Minutes, the credentials of the Chicago College of Pharmacy and Maine Pharmaceutical Association were received, and the report of the Nominating Committee read, the nominees being elected, as follows:

President, Wm. Saunders, London, Ontario.
First Vice President, Ewen McIntyre, New York.
Second Vice President, John Ingalls, Macon, Georgia.
Third Vice President, Emlen Painter, San Francisco, California.
Treasurer, Charles A. Tufts, Dover, New Hampshire.
Permanent Secretary, John M. Maisch, Philadelphia, Pennsylvania.
Reporter on Progress of Pharmacy, C. Lewis Diehl, Louisville, Kentucky.

Executive Committee—Geo. W. Kennedy, chairman, Pottsville, Pa.; Homer P. Tarrant, Augusta, Ga.; Albert L. Calder, Providence, R. I.; James G. Steele, San Francisco, Cal.; John M. Maisch, Permanent Secretary *ex-officio*, Philadelphia.

Committee on Drug Market—W. H. Wickham, chairman, New York; T. Roberts Baker, Richmond, Va.; Solomon Carter, Boston; Henry W. Fuller, Chicago; Christian F. G. Meyer, St. Louis.

Committee on Papers and Queries—Edward P. Nichols, chairman, Newark, N. J.; Edward Shuttleworth, Toronto; M. L. M. Peixotto, New York.

Business Committee—Henry J. Menninger, chairman, Brooklyn; Henry S. Wellcome, New York; Wm. Simpson, Raleigh, N. C.

Committee on Prize Essays—C. Lewis Diehl, chairman, Louisville; John F. Judge, Cincinnati; Emil Scheffer, Louisville.

Committee on Legislation—John M. Maisch, chairman, Philadelphia; Samuel A. D. Shephard, Boston; Adolph Pfeiffer, St. Louis.

Messrs. Diehl and Ebert conducted the President elect to the chair, who expressed thanks, and counseled close attention to the business and moderation in the debates, even when differing widely in opinion. The Vice Presidents elect who were present were then likewise introduced.

The Executive Committee reported the applications of thirty-five candidates for membership, one of whom was withdrawn, and the remaining thirty-four elected.

The Treasurer's report, which was now read, accounted for expenditures during the past year of $5,559.98, and a balance on hand of $954.39; related the indifferent result of calling in the certificates of membership from former members, and referred to the life-members under the old constitution, suggesting that they voluntarily pay the net cost of the Proceedings which they now receive free of charge. The accounts were ordered to be referred to an auditing committee of three, consisting of Messrs. Eberle of Pennsylvania, Gregory of Ontario, and Rogers of New York.

Mr. Ingalls extended an invitation to the Association to hold its next annual meeting at Atlanta, Ga.; a similar invitation from Cincinnati was read, and some discussion was had as to the best time for holding a meeting in the Southern States. The invitations were referred to Messrs. Remington of Pennsylvania, Baker of Virginia, and Ebert of Illinois for consideration and report.

The introductory part of the report on the Progress of Pharmacy was read by Mr. Diehl, and referred for publication.

The following reports of committees were read: On Prize Essays (see this journal, p. 265), on Legislation, on Adulterations and Sophistications, and on the Centennial Exhibition, the latter being supplementary to the one published in the last Proceedings. The suggestions contained in the report on Prize Essays were subsequently referred to the new committee to be reported on next year.

After fixing the hour of the next session the Association in a body paid a visit to the Exhibition Room, to examine the numerous specimens.

THIRD SESSION, Tuesday Afternoon, September 5th.

The Minutes of the previous session were read and approved. The amendment to the By-Laws, lying over from last year, requiring a motion for expulsion to be laid over to a subsequent session, was discussed, and received 19 affirmative against 7 negative votes.

The committee on the place and time of the next annual meeting reported in favor of Atlanta, Ga., and proposed to meet there on the third Tuesday of September next. The time was changed to the first Tuesday of the same month, and the report then adopted.

His Worship, Angus Morrison, Esq., Mayor of Toronto, was introduced, and welcomed the Association to the city and to the hall in which the meeting was held.

Dr. Nichols presented the report of the committee appointed to consider the suggestions made by the officers. The first portion, relating to the Centennial Fund in aid of original investigations, was approved and adopted, and the whole subject placed into the hands of a committee consisting of the chairman of the Executive Committee, the Treasurer and Permanent Secretary, who were empowered to securely invest the money and to raise $525 or more from the members. The second portion of the report referred to the financial condition of the Association and to the relation of the life-members; and since it involved alterations of the By-Laws, was laid over.

Scientific papers being called up, the following were read:

On the substitution of parts by weight for absolute quantities in the Pharmacopœia, Prof. Sharples, in a brief communication, reiterated the views expressed the year before.

On Cantharidal Collodion.—Mr. Joseph Roberts suggested to displace the cantharides with a mixture of equal parts of alcohol and ether, in order to render the gun cotton more freely soluble in the percolate.

On Oleates.—Mr. Wm. S. Thompson communicated a number of formulas for preparing medicinal oleates and ointments of oleates.

On Veratrum Viride.—Dr. C. A. Robbins corroborated the observations of Mr. Bullock concerning the non-existence in this rhizome of veratria and the presence of jervia. From the resinous matter the author reported having separated another alkaloid, for which the name of *Veratridia* is proposed, and the pysiological and chemical relations of which had been investigated. It was to be regretted that a sample of this alkaloid was not exhibited, which would have completed the chemical history of the American veratrum in connection with the handsome preparations placed on exhibition by Mr. Chas. Bullock, as the results of his long-continued investigations.

On a false Senega-root.—Mr. Maisch stated that he had traced the so-called *white senega-root*, which occasionally appears in commerce, to Greene county, Mo., where it is collected, but he had been unable to procure specimens of the plant, or even of the root.

The root of Epilobium Angustifolium.—Mr. C. J. Biddle reported that it had been used with success in the Philadelphia Hospital in the treatment of aphthæ. A partial analysis revealed the presence of large quantities of tannin and mucilage, also starch, sugar, resin and a crystalline calcium salt.

The Compound of Chloral Hydrate and Camphor.—Mr. Jos. Roberts adopts the view of E. C. Saunders ("Am. Jour. Phar.," 1876, p. 462), that the liquid resulting from the union of the two bodies is merely a solution of chloral in camphor.

On Extract of Aloes.—Mr G. W. Kennedy obtained with hot water 36 per cent. more extract than with cold water; but the latter was more aromatic, less griping and equally effective in a much smaller dose, 2 grains producing the same effect as 3 grains of the hot water extract.

On Aloin.—Mr. A. P. Brown found that barbaloin possesses about the same purgative effect as an equul dose of Barbadoes aloes, and that the extract obtained by evaporating the mother liquor from which aloin has been deposited was nearly destitute of purgative properties.

On Lactucarium.—Mr. Joseph L. Lemberger reported that a concentrated liquid preparation may be made, and promised to furnish a formula next year.

FOURTH SESSION, Thursday Forenoon, September. 6.

The committee on the officers' reports presented a proposition to amend Chap. vi, Art. iv of the By-Laws, so as to require life members under the old constitution to pay $3.00 annually for the Proceedings The subject was ordered to be referred to a special committee.

A paper on **Magnesia** by Mr. Geo. Leis was read, in which the author reported commercial carbonate of magnesium to contain 39·72 to 40·75 per cent. MgO; Jenning's light calcined magnesia was found to contain 78·01, Husband's 90·33 and Powers & Weightman's 95·46 per cent. MgO; in two of the samples about one per cent. of Na_2O was found.

Mr. Saunders read the report of the committee on the drug market, in which he dwelt upon the difference between the drug market of the United States and Canada and referred to the nature and supply of Canadian drugs.

The resolutions of Dr. Squibb, concerning a change in the revision of the Pharmacopœia, which had been laid over from last year, were called up, and the subject was dropped at the mover's request. Mr. Sheppard then presented the following resolution, which was unanimously adopted:

Resolved, That while there may be among the members of the American Pharmaceutical Association an honest difference of opinion as to the advisability of the plan suggested by Dr. Squibb, the thanks of the Association be and are hereby tendered to Dr. E. R. Squibb, of Brooklyn, N. Y., for his earnest efforts during the past two or three years to inaugurate an improvement in the plan of revision of the U. S. Pharmacopœia.

Dr. Fr. Hoffmann introduced a lengthy preamble, which was subsequently modified to meet the views of several members, and the following resolution:

Resolved, That the President of this Association appoint a committee of five to take into consideration the advisability and feasibility on the part of the American Pharmaceutical Association, as the national representative organization of the profession of pharmacy, to prepare a complete Pharmacopœia, which may be submitted to the criticism of the medical and pharmaceutical professions, and may be proposed to the final Committee of Revision, and that that committee be instructed to report early at the next session, so as to leave time for definite action at this meeting.

The resolution was adopted, and the committee appointed, as follows: Messrs. Peixotto of New York, Remington of Pennsylvania, Markoe of Massachusetts, Ebert of Illinois, and Baker of Virginia.

The Auditing Comittee reported having found the Treasurer's account correct, recommended an increase of his salary in the sum of $100, and proposed the appointment of a committee of five to devise means of meeting the increased expenditures. The last resolution was carried, and the previously proposed amendments to the By-Laws ordered to be referred to the same committee, consisting of the Auditing Committee, the Treasurer and the Permanent Secretary.

Prof. Markoe read a paper on **Oil of Myrcia acris**, which had been distilled by himself, and exhibited numerous specimens of the leaves, oil and products of the fractional distillation of the latter. The volatile oil is a mixture of a light and heavy oil, the latter being eugenic acid.

Prof. Bedford exhibited samples of wax to illustrate the process of bleaching, and a number of samples of white wax, variously adulterated, in illustration of a paper treating of the **Detection of Adulterations of White Wax.** The author suggests to keep on hand alcohol of specific gravity ·950 and ·970, in the former of which pure wax will always sink and in the latter float. Paraffin and ceresin are detected by not being carbonized on being warmed with sulphuric acid, and stearin by the formation of soap on being heated with a weak solution of sodium carbonate.

In a paper on **Hydrobromic Ether** Prof. Remington proposed its preparation by a modification of Personne's process: 6 parts of amorphous phosphorus are introduced into 33 parts of well cooled alcohol, 26 parts of bromine are added by drops, care being taken to avoid too great elevation of temperature; after setting aside for 24 hours, the mixture is distilled from a water bath, the distillate washed with a weak alkali, and rectified over chloride of calcium.

FIFTH SESSION, Thursday Afternoon, September 6.

The By-Laws were amended, increasing the Treasurer's salary to $500, after which the following papers were read:

On Eau de Cologne.—Mr. Wm. Saunders proposes the following formula as an imitation of Farina cologne water: Oil of neroli 5 drachms 20 minims, oil of bergamot 1 ounce, oil of rosemary 1 drachm 20 minims, extract of jasmin 1 ounce, pure alcohol 6 pints, water 2 pints; mix and filter. For a cheaper perfume its dilution to one-half with alcohol of the same strength is recommended. Dr. Squibb suggested the addition of some acetic ether, and Dr. Menninger stated that one ounce of it to the gallon of cologne water would render the latter more grateful.

On the use of Cassia Fistula in Confection of Senna.—Dr. A. W. Miller stated that the article could be readily obtained, but appeared to be unnecessary; a simplified formula was given, omitting the cassia fistula and increasing the tamarinds and prunes.

On Salicylic Acid.—Mr. R. V. Mattison gave an account of its occurrence, preparation, solubility and uses. Another paper by Mr. David Hays treated of the effect of salts which are used to increase the solubility of the acid in water, the conclusion being that a reaction takes place, at least a portion of the acid being converted into salt. Dr. Squibb stated that he had observed salicylic acid to be readily sublimable by means of steam heat, the contrary statements of European authorities notwithstanding, and that the sublimed acid is purer than the dialyzed and most of the salicylic acids purified by crystallization from liquids.

Prof. Bedford, on behalf of the Permanent Committee on the Pharmacopœia, made a verbal report and tendered the resignation of the committee, which was accepted. A communication from the California College of Pharmacy and Pharmaceutical Society, referring to the revision of the Pharmacopœia, was then read, laid upon the table, and afterwards referred to the new committee on the Pharmacopœia. The report of the committee on Dr. Hoffmann's resolution reported and proposed

That this Association appoint a committee on the revision of the U. S. Pharmacopœia, consisting of fifteen members, who shall be instructed to prepare, by a plan to be determined by themselves, the text of the proposed new Pharmacopœia; and that they report progress at each subsequent meeting, and finally lay before the Association at its meeting in 1879 a complete result of their labors.

The resolution was carried, and the following committee appointed: Charles Rice, Fred. Hoffmann and P. W. Bedford, of New York; J. M. Maisch, J. P. Remington and Chas. Bullock, of Philadelphia; G. F. H. Markoe and S. A. D. Sheppard, of Boston; J. F. Hancock, of Baltimore; A. E. Ebert, of Chicago; C. L. Diehl, of Louisville; E. S. Wayne, of Cincinnati; W. H. Crawford, of St. Louis; Chas. Mohr, of Mobile, and Emlen Painter, of San Francisco.

Mr. Gregory read a paper on **Emulsion of Almonds**, relating experiments with different mortars and varying manipulations. After blanching, the almonds should be reduced to a smooth paste by breaking them in a wedgewood mortar with a slightly flattened bottom, and of not less than 5 inches inside diameter for ½ oz. of almonds, and beating them, with the gradual addition of little water if the mass becomes dry or oily; when reduced to a paste, gum, sugar and other ingredients may be added gradually.

Dr. Pile read a paper on **Dialyzed Iron**, giving the result of some experiments and determining the specific gravity of a 5 per cent. solution to be 1·029.

A paper on **Resin of Podophyllum**, by F. B. Power, was read by the Secretary. On distillation with water a volatile fatty acid, probably myristic acid, was obtained. No alkaloid was found, but some protocatechuic acid which appears to pre-exist in the rhizome; the yellow coloring principle is altogether due to the acid portion of the resin. In commenting upon this valuable paper, Mr. Maisch stated that the bright yellow resin of podophyllum sometimes met with, is obtained by precipitation with alum, and contains an alumina compound; also, that the mother liquor of the precipitated resin sometimes—not always—gives to general tests indications of the presence of a little alkaloid.

SIXTH SESSION, Friday Forenoon, September 7.

The following papers were read:

On the use of Glycerin in Fluid Extracts.—Mr. J. U. Lloyd has found a decided advantage in the case of drugs containing much tannin. Other fluid extracts are mentioned in which glycerin is stated to be apparently not superior to water. Observations leading to these conclusions were not given.

On Official Fluid Extracts.—Mr. Lloyd is strongly in favor of cylindrical percolators, in which the powder should occupy at least 15 inches in height. A change in the menstruum of several fluid extracts is likewise advocated.

On Syrup of Iodide of Iron, Mr. L. M. Connor observed a syrup, the deep green color of which was discharged by dilute nitric acid; he concluded that it had been colored with anilin green. Mr. Maisch considered this insufficient proof for the conclusion.

On Resin of Scammony.—Prof. Markoe ascertained that washing with water removes but 2 per cent. of soluble matter; the alcoholic extract of scammony appears therefore to be practically identical with the resin.

On Cream of Tartar Supplied in Ontario.—Mr. Saunders found several samples, obtained from grocers, to be largely adulterated.

On Bonjean's Ergotin.—Mr G. Zellhoefer recommends to evaporate the infusion of 16 oz. of ground ergot made with cold distilled water to 4 fluidounces, and add to this 16 fluidounces of alcohol, specific gravity ·832; the filtrate evaporated yields 11·5 per cent. of ergotin.

On the Bromine Production of the United States.—Mr. H. S. Wellcome gave a brief history of this enterprise, and stated that the capacity of the various works at present is estimated by manufacturers at 3,000 pounds per day, while the actual production does not exceed 1,000 pounds.

On the Requisite Knowledge of Therapeutics by Pharmacists.—Mr. B. T. Fairchild argued that any culture in therapeutics or other collateral science cannot fail to add to the usefulness of the pharmacist, and render him by no means more prone to overstep the limits of his duties than he who has a low estimate of the requirements of pharmacy, and is therefore not likely to respect the province of medicine.

Mr. Shinn exhibited specimens of paraffin paper made in Philadelphia, and explained the uses to which it may be applied.

Prof. Markoe exhibited and explained Zentmayer's new students' or histological microscope; also a standard meter, liter and other appliances made by the American Metric Bureau to illustrate the decimal measures.

The report on the exhibition was read, and referred for publication. A resolution, offered by Mr. Wellcome, hereafter to discontinue the exhibitions, was referred to the Executive Committee for consideration and report at the next annual meeting.

An invitation from the Toronto Mechanics' Institute, placing the facilities of their reading room at the disposal of the members, was accepted with thanks.

The following pharmacists were elected honorary members: Prof. H. A. L. Wiggers, of Goettingen, Germany; Prof. G. Planchon, of Paris, France; Prof. Ed. Schaer, of Zurich, Switzerland, and Prof. X. Landerer, of Athens, Greece.

After the election of several new members, the proposition was made and laid over until next year, to amend Art. I of the Constitution by striking out the words, "the United States," and inserting in place thereof, "America."

Mr. A. J. Rankin, of Atlanta, Ga., was elected Local Secretary for the ensuing year.

Resolutions of thanks were passed to the Department of Education for the Province of Ontario; to the officers and members of the Ontario College of Pharmacy and their ladies; to the city government of Toronto; to the Local Secretary, Mr. H. J. Rose; to the reporters and the press, and to the citizens of Toronto. A number of speeches were made and toasts proposed, after which the Association adjourned to meet again at Atlanta, Ga., on the first Tuesday of September, 1878.

BRITISH PHARMACEUTICAL CONFERENCE OF 1877.

On Sunday, August 12th, a hundred men in perhaps a hundred places, were preparing for their visit to Plymouth, and during the whole of Monday the trains which arrived at that town brought thither numbers of visitors, some for the Conference, some for the British Association, and others for both. If anything were wanted to prove the general interest taken in pharmacy, both by pharmacists and some scientific chemists, it might perhaps have been found in the abandonment of pleasure by many who formed part of Tuesday and Wednesday meetings. There were present gentlemen from the far North, East, West and South, and even those who had been rambling during their annual holiday amid the wilds of Dartmoor and roving along the yet wilder and craggy coasts of Cornwall forsook those charming resorts for the sake of science.

By midnight on Monday small gatherings of visitors had assembled at all the chief hotels, and were to be seen seriously discussing the virtues of their tobacco and their glasses. And punctually at ten the next morning did the Conference summon its members to consider the report of the executive, and listen to the interesting address of the President, Professor Redwood.

This address consisted of a timely *résumé* of the history of the steps by which "the druggist of to-day has been transformed into the apothecary of the seventeenth century." Recognizing the existence of circumstances liable to induce fears that in the attempt to raise the *status* of the practice of pharmacy substantial advantages may be lost, and only barren honor gained, the President sought in the history

of the past a demonstration that the profit as well as the honor from such an occupation will mainly depend upon the qualifications of those following it to render valuable and efficient service to the public. In doing so he traced the rise of the barber surgeons and physicians, the origin of the apothecaries in the need of the physicians, and their subsequent antagonism to them, how a sense of the public requirements was too strong to allow of the restriction of the apothecaries to the mere dispensing of medicines, and how the apothecaries in their turn, having attained a higher position by virtue of their recognized utility to the public, became the assailants instead of the assailed. This led to the opposition of the chemists and druggists, organized in 1813, which left a mark upon the Apothecaries Act passed two years later, not without interest at the present time. Professor Redwood's address was listened to with deep attention, and will no doubt be read with much interest by many who were not present to hear it.

The first paper was a Report read by Dr. Wright, in the names of Mr. Groves, Mr. Williams, and himself, who constituted a committee, appointed at the last meeting to continue investigation upon the aconite alkaloids. It was pointed out that in past reports the existence of two well defined alkaloids in *A. Napellus* had been established, viz.: aconitine, $C_{33}H_{43}NO_{12}$, and picraconitine, $C_{31}H_{45}NO_{10}$, while from *Aconitum ferox* a third alkaloid had been isolated, expressed by the formula $C_{36}H_{49}NO_{11}$. The results which formed the chief features of the present communication illustrated the decompositions undergone by aconitine and pseudaconitine under influences resulting in the assimilation of water, for instance, treatment with dilute acids and alkalies. These decompositions Dr. Wright expressed as follows:

(1) $\underset{\text{Aconitine.}}{C_{33}H_{43}NO_{12}} + H_2O = \underset{\text{Benzoic. Acid.}}{C_7H_6O_2} + \underset{\text{Aconine.}}{C_{26}H_{39}NO_{11}}$

(2) $\underset{\text{Pseud-aconitine.}}{C_{36}H_{49}NO_{11}} + H_2O = \underset{\text{Dimethyl-protocatechuic acid.}}{C_9H_{10}O_4} + \underset{\text{Pseud-aconine.}}{C_{27}H_{41}NO_8}$

Among other matters treated of in this paper Dr. Wright detailed a method for assaying the commercial aconite alkaloids, which he claimed to yield approximately accurate results.

In the next paper, Dr. Paul and Mr. C. T. Kingzett described the alkaloid of Japanese aconite, which was shown to be different from anything described by Wright or other observers. A sample of the crystalline base was exhibited, the formula attributed to it being $C_{29}H_{43}NO_9$. The authors gave their reasons for believing that the various alkaloids which had been universally described and analyzed as alkaloids of aconite were probably salts of the bases in combination with an acid perhaps aconitic. In the course of the discussion following the reading of these two papers Mr. Kingzett criticized the analytical data submitted by Dr. Wright in his various reports on this subject.

"The Active Principle of Cayenne Pepper" was the title of the third paper, by Mr. J. C. Thresh. The author reported that he had found free palmitic acid to be a natural and predominating constituent of cayenne pepper fat, and further described capsaicin or the active principle which is obtained in small amount from cayenne pepper, and which has a formula near to $C_6H_{14}O_2$. In the discussion which followed the imperfectly known physiological action of capsaicin formed the chief topic.

The next communication was by Dr. Tilden "On the Essential Oils with special reference to the Hydrocarbons contained in them." In it were described the results of a further study by the author of the action of nitrosyl (NOCl) upon various terpenes of the formula $C_{10}H_{16}$, and upon other substances of the composition $C_{15}H_{24}$. The terpenes give compounds which yield on suitable treatment substitution products expressed by the formula $C_{10}H_{15}(NO)$, while the hydrocarbons $C_{15}H_{24}$ fail to show this character.

These results agree with those of Kingzett and Wright, who each by pursuing different lines of research have arrived at similar conclusions regarding these classes of bodies. Whereas, however, these chemists believe that only one cymene, $C_{10}H_{14}$, exists, and may be got from all the terpenes, Tilden believes that a number of isomeric cymenes exist, the only ground for this belief brought forward being the differences exhibited by different specimens in their rotatory power over light.

In the next paper, by Messrs. M. M. P. Muir and S. Sugiura, essential oil of sage was further described; also the terpenes which they have obtained from it and their action upon light, and the composition of certain camphor-like bodies contained in the essential oil.

Following this paper was one by Mr. R. H. Davies upon "The Constituents of the Ivy," although virtually the only one treated of by the author was hederic acid, a substance isolated originally by Posselt, and further described by Hartsens. In analyses made of this substance Mr. Davies had experienced a difficulty in combustion, although as a matter of fact, it may be remarked that when heated on platinum foil alone, it burns away quite easily and entirely, leaving not a trace of charcoal. Mr. Davies arrived at a higher percentage of carbon for the substance than did Posselt, whose analyses led to the formula $C_{15}H_{24}O_4$ while those of Mr. Davies give $C_{16}H_{28}O_4$. A nitro compound $C_{16}H_{25}(NO_2)O_4$ was also described, but attempts to prepare certain salts proved futile. This might have been expected of a substance having the character of a glucoside as predicted last year by Mr. Kingzett, who now followed Mr. Davies with a note on hederic acid.

In this communication Mr. Kingzett described the means whereby, following up his own suggestion as to the nature of this substance, he had isolated glucose from hederic acid, and had obtained a barium salt of the same, the analysis of which was described. Mr. Kingzett explained that this research formed part of a broader investigation, the first part of which had been communicated to the Chemical Society recently by Dr. Hake and himself, and he regarded the production of sugar from hederic acid as one proof of the correctness of his theory described in that paper.

Mr. J. Eliot Howard was the author of the next paper "On the Supply of Cinchona Bark, as connected with the present price of Quinine." The discussion which ensued was perhaps as interesting as the paper itself, the points which were elicited being as follows: Although it would be attended with some advantages to use other cinchona alkaloids than quinine for at least some purposes, yet the medical evidence available is far from satisfactory as regards the specific action of any of the other alkaloids except quinine. More satisfactory evidence of the kind must therefore be obtained before the commercial develpoment of cinchonidine, etc., can be attempted on a large scale.

In his "Supplementary Note on the Assay of Opium," Mr. B. S. Proctor described certain improvements he had introduced into the method described at the last Conference meeting. In reference to this method it is questionable whether the extraction of opium by percolation satisfies the requirements of commercial analysis. It may also be pointed out that in washing morphia when separated from the other alkaloids, no fixed standard of the amount thus dissolved can be depended upon, varying as it does not only with other conditions but notably according to the influence of certain very soluble bodies in causing other bodies by themselves insoluble to pass into solution.

Mr. W. W. Stoddart's "Notes on an Impurity in Oxide of Zinc," were directed to the presence of sulphite of zinc, and in the disscussion which followed various explanations were offered, the most plausible one being that the sample in question had been made by ignition of the sulphate which constitutes to some extent a waste product of the autogenous soldering process.

Dr. Symes then read a paper on "Sugar in Pharmacy," in which he described the various sugars to be found in commerce, their degree of purity and impurity, their inversion by acids, and their general use in pharmacy. In particular he showed that the syrups of saffron and roses could be readily prepared by making concentrated infusions and filtering upon granulated sugar contained in a hot water bath, with frequent stirrings till dry.

The meeting on Tuesday concluded with a paper by Mr. A. W. Gerrard, in which he described experiments leading him to the conclusion that *Narcissus Pseudo-Narcissus* contained an alkaloid and certain other principles of interest. He had not obtained any product in a state of purity, nor were any analyses forthcoming or other evidences of identity.

The Conference meeting of Wednesday opened with an interesting paper by Mr. E. Smith, on the "Materia Medica of Devon." This, of course, included a sketch of the botany of the county, and an account of the large copper, iron, manganese, arsenic and other mining industries which are so actively prosecuted. Mr. Smith, however, did not allude to the diminution of pyrites and manganese mining brought about since the large importation of these minerals first commenced.

The second paper on Wednesday's list was by Mr. G. F. Schacht, who related "Some Experiences in the Equipment and Working of a small Pharmaceutical Laboratory." The paper was illustrated by some excellent drawings by Mr. J. T. Thompson, and gave rise to a conversation in which many gentlemen took part, and gave other personal experiences as to the best form of several pieces of laboratory apparatus and appliances.

Mr. W. H. Martin's "Note on Diphenylamine as a Test for Nitric and Nitrous Acids," was illustrative of the observations made previously by Professor Lunge, recently published. The test appears to be an exceedingly delicate one. In applying it a small granule of diphenylamine is placed in a test-tube, and a drop or two of sulphuric acid added, then water so as to increase the temperature in order to effect a perfect solution of the diphenylamine. If to such a prepared test solution sulphuric acid be added containing only a trace of nitric or nitrous acid a beautiful permanent blue color is immediately produced at the junction of the liquids.

A paper by Mr. J. C. Thresh on "The Pill Masses of the B. P." contained a report on those which in his opinion are of inconvenient consistence or become so by keeping, and suggestions for their improvement.

After this, a paper by Dr. Tilden was read upon "A Product of the Oxidation of Barbaloin and Socaloin," which he has named alloxanthin, constituting a yellow coloring matter closely related to chrysammic acid and to emodin.

It had been determined at the meeting of the previous day that Mr. S. R. Atkins' paper "On a Point in Pharmaceutical Ethics" should be read without being subjected to discussion. This course was, however, protested against by Mr. Guyer, as forming an undesirable precedent, but the protest was overruled. In the paper Mr. Atkins defined the specific positions occupied by pharmacists and medical men, and showed that it was quite feasible to decide the hotly disputed matter of counter practice without evincing bad spirit and acrimony. He contended that pharmacists had a public justification for counter practice in simple complaints, but warned them against carrying it to an unjustifiable degree.

This paper was followed by one relating to a question which not only affects a large trading interest, but is also one of importance as regards the public health. The paper in question was intended to elucidate the influence exercised by the presence of metallic compounds in alimentary substances. It was chiefly occupied with the results of an investigation by Dr. Paul and Mr. Kingzett into the physiological action of the copper known to be contained in preserved peas, particularly those of French manufacture, and it was shown by the authors that the copper as it exists in the peas is not only in an insoluble state and in actual combination with the albuminous constituents of the peas, but is not removed by the water used in the process of cooking. During digestion this copper passes entirely into solution if sufficient time be allowed; nevertheless it is for the most part excreted in the fæces, being probably reprecipitated through the agency of biliary fluid as phosphate. Only a very minute trace, therefore, is absorbed into the system, thus proving the non-injurious nature of such peas as an article of food. It was also shown that many compounds used largely in coloring confectionery contain from 6 to 70 per cent. of stannic oxide; besides which other articles of food containing metallic compounds were described. In the discussion which followed Dr. Wright called attention to some instances of poisoning through the agency of lead, tin and zinc, which had been reported in the daily papers. Dr. Redwood stated that, in his opinion, the vendors of preserved peas containing copper should be prosecuted on the ground that they were selling an article of food containing something not natural to the peas, but intentionally introduced. To this it was replied that persons who consumed such peas would not suffer the slightest injury to health, a conclusion which received considerable support from evidence given in the discussion by various speakers. It was particularly insisted upon by the authors that medical opinion, no matter how unanimous, was worthless, so long as that opinion was based upon an imperfect knowledge of the facts necessary for its formation.

The "Analyses of Preserved Carrots, Potatoes, Cabbage and Mixed Vegetables," detailed by Professor Attfield in the next paper, have been for the most part previously published in the report of the Commission appointed to inquire into the causes of the outbreak of scurvy on the Arctic Expedition.

Mr. Kingzett next read a paper on "Scammony Root," by Mr. Farries and himself, in which it was shown that the roots of *Convolvulus scammonia* contain no alkaloid, although it has been asserted by Marquart that an alkaloid does exist in the root. Resin of scammony yields glucose on decomposition with dilute sulphuric acid and by various other processes given in the paper, an analysis of barium glucinate being brought forward in support. Mention was also made of the volatile oil produced below 90° C. by dry distillation of the resin; its examination is not completed.

In a "Further Note on the History of Tea Hair," Mr. T. Greenish showed that the hair contains no thein and gave a general description of their occurrence and properties.

Mr. L. Siebold's paper on "Copaiba Testing" showed that beyond fatty oils, such as linseed, turpentine oil was the only other probable adulterant. He also pointed out that the methods of testing still given in many books are valueless. He had found that Dr. Muter's process for testing copaiba also was unreliable, while the simple process of evaporating to dryness was sufficient to yield indications of purity or impurity, according to the stickiness or dry nature of the product. Turpentine could be easily detected when present, in the first portions obtained on the distillation of copaiba oil, and recognized by its lower boiling point and odor.

Mr. Moss stated in the discussion that as regards Flückiger's test for the purity of copaiba oil, he had never experienced any difficulty in the use of it. Mr. W.W. Urwick's "new medicinal solution of phosphorus" consists of a preparation in which egg albumen is employed, and Dr. Redwood pointed out that he had already given a formula in which that substance was used for the purpose stated.

Mr. Kingzett's paper on "Blood Albumen" contained a detailed account of the process patented by Mr. Zingler and himself for bleaching and preserving blood albumen, and the various uses of the product. The process consists in passing a current of air through albumen solution admixed with a certain small percentage of turpentine, and maintained at about 40° C. The oil oxidizes, forming peroxide of hydrogen, which effects the bleaching, while the camphoric acid and other substances simultaneously produced preserve the solutions of albumen almost permanently from any putrescible or other change.

In his next paper on "Pilocarpine" Mr. Kingzett gave the analysis of a platinum salt made from a sample of the nitrate given to him by Professor Attfield, which proved the identity of the alkaloid with that to which he had previously assigned the formula $C_{22}H_{34}N_4O_4$. On distillation of the salt $C_{22}H_{34}N_4O_4$, $2HCl$, $PtCl_4$ to dryness with strong caustic soda solution, trimethylamine appears to be produced.

The last paper read was by Mr. Willmott on the "Effects of Variations of Temperature on Boiled Putrescible Liquids."

It was then determined to hold the next annual meeting of the Conference at Dublin, and after the usual business matters had been concluded, including the appointment of a new President in the person of Mr. G. Schacht, the Conference dissolved.

On Thursday, notwithstanding a smart shower just before the time fixed for embarkation, a considerable number of ladies and gentlemen accepted the invitation of the Local Committee to join in an excursion up the River Tamar. The

programme, as previously sketched out, was closely followed. The boat proceeded up the river as far as Cotehele, the grounds of which were visited, then returned to Pentillie where an ample lunch was followed by a stroll through grounds, from which a magnificent view including the windings of the river was obtained. The kindness of Col. Corydon in throwing open the grounds was recognized in three hearty cheers given by the company. After the company had once more returned on board, the "Eleanor" proceeded on her course down the river to Mount Edgcumbe, where some landed whilst others went on for a run to the breakwater. By a little after six o'clock, however, the company had once more reunited in the "orangery," where, within view of numerous splendid specimens of the genus *Citrus*, bearing fruit and flowers in the open air, and within hearing of the musical strains of the capital band of the Royal Marines, "high tea" was served. Then, at the conclusion of a most successful day, the threatening clouds of the morning having soon dispersed, the President, Professor Redwood, speaking on behalf of the visitors, acknowledged the kindness and hospitality of the Local Committee, and also their appreciation of the generosity of the Earl of Mount Edgcumbe, which had allowed them to view his magnificent seat.

In concluding this notice it may be said that from the beginning to the end of the Conference meeting there was ample evidence that not effort had been spared to secure the comfort and enjoyment of the visitors, and there can be no doubt that in the manifest appreciation of this fact Messrs. Clark, Skinner, Turney, Codd, Balkwell, and the other members of the Local Committee will find the most grateful acknowledgment of their labors.—*Phar. Jour. and Trans.*, August 18, 1877.

EDITORIAL DEPARTMENT.

The Exhibition at Toronto in connection with the twenty-fifth annual meeting of the American Pharmaceutical Association was less extensive than at former meetings; but when it is considered that nearly all the goods had been sent from the United States, and that the trouble attending the exportation and subsequent re-importation had doubtless prevented exhibitors from sending goods, the display was very creditable and did not lack in variety.

Crude drugs were represented by cinchonas from Powers & Weightman; recently introduced drugs, like Eucalyptus, Coca, etc., from McKesson & Robbins, and a large number of herbs and flowers, both loose and pressed, from B. O. & G. C. Wilson, of Boston.

Chemicals.—A very handsome and extensive collection of cinchona and opium products, mercurials, scale preparations, sulphocarbolates, etc., was tastefully arranged by Powers & Weightman, of Philadelphia. A collection of chemicals by Chas. T. White and Co., of New York, was unfortunately delayed in transportation. Chas. Bullock exhibited the results of his investigation of veratrum viride, consisting of jervia and its salts, two resins and fixed oil. McKesson & Robbins had sent about fifty samples of rare chemicals.

Pharmaceuticals.—Pills, coated with gelatin and with sugar and compressed, were shown by McKesson & Robbins and by W. H. Schieffelin & Co., of New York, and Wm. R. Warner and John Wyeth & Bro., Philadelphia; saccharated pepsin, by E. Scheffer, Louisville, and Lazell, Marsh & Gardiner, New York; perfume extracts, by the last-named firm and by McKesson & Robbins; extracts, and more particularly fluid extracts, by the two firms mentioned and by Wm. Saunders; vol-

atile oils, by McKesson & Robbins; plasters, by Seabury & Johnson, New York; bougies, by Allan & Co., Buffalo; nitrite of amyl pearls and iodoform crayons, by F. A. Reichardt, New York; liquorice, of their own manufacture, by Mellor & Rittenhouse, Philadelphia.

Appliances and Miscellaneous.—Dispensing and counter scales were on exhibition from Hy. Troemner, Philadelphia; wafer press and wafers from Neidlinger & Co., New York; show cases from F. A. Howell, New York, and W. Millichamp, Toronto; Messten's microscopes, by Fr. Hoffmann, New York; native wines, by H. K. Thurber, New York; Saratoga mineral waters, by Gates & Bro., Saratoga; a soap-cutting machine, by Van Buest & Co., New Albany.

OBITUARY.

HUGH ALGERNON WEDDELL, M.D., died at Poitiers, France, July 22, at the age of 58 years. The deceased was well known as the author of many botanical memoirs, among which the most celebrated is his illustrated *Histoire naturelle des Quinquinas*, which was published by Riocreux et Steinheil, at Paris, in 1849. The work was the fruit of personal observations made on a journey to Southern Peru and Bolivia, after he had been exploring for two years, since 1843, some of the interior provinces of Brazil and a portion of Peru, in company with M. de Castelnau. Besides other species, he discovered, in 1847, *Cinchona Calisaya* and several of its varieties, and recognized in it the source of Calisaya bark which had then been known in Europe for about 60 years. He strongly advocated to attempt the cultivation of the cinchonas, which is now successfully carried on in the East Indies, and also directed attention to the importance of the microscopical investigation of the histological relations of the cinchona barks, which has since led to such important results through the observations of Schleiden, Berg, John Eliot Howard and others. In 1870, Weddell published *Notes sur les Quinquinas*, in which he reviewed the botany of that genus and arranged the 33 species into 5 "stirps." Recently he interested himself in favor of the more extended use of the cheaper cinchona alkaloids in place of quinia.

The deceased was a member of numerous scientific bodies, and the Philadelphia College of Pharmacy loses in him one of its honorary members.

GEORGE WANSEY ANDREWS died in Baltimore September 12th, at the ripe age of 76 years. He was born and educated in that city, commenced business on his own account in 1829, was afterwards for thirty years a member of the firm of Andrews & Thompson, and retired from active business in 1871. He was one of the founders, and, for many years, president of the Maryland College of Pharmacy. Though not present at the organization of the American Pharmaceutical Association in 1852, the convention paid him the compliment of electing him First Vice President, and in 1856-57 he served as President of the Association. He had been a member of the Maryland Academy of Sciences for over fifty years, and during his long life enjoyed and retained the reputation of reliability and scientific attainments as a pharmacist, activity and correctnees in his business relations, and of being a good and useful man and citizen.

GUSTAVUS KRAUSE was born September 19th, 1822, at Cüstrin, Prussia, served his apprenticeship with his brother at Schönhaide, Saxony, and completed his pharmaceutical education at Berl n. He left Germany for political reasons, and after residing in France for about twelve years came to this country about twenty years ago, and soon afterwards entered the establishment of Samuel Simes, corner of Twelfth and Chestnut sts., Philadelphia, of which he subsequently became owner, until, after a long illness, he died Sept. 25th, aged 55 years. The deceased was a member of the Philadelphia College of Pharmacy.